

# CHALLENGES

1961

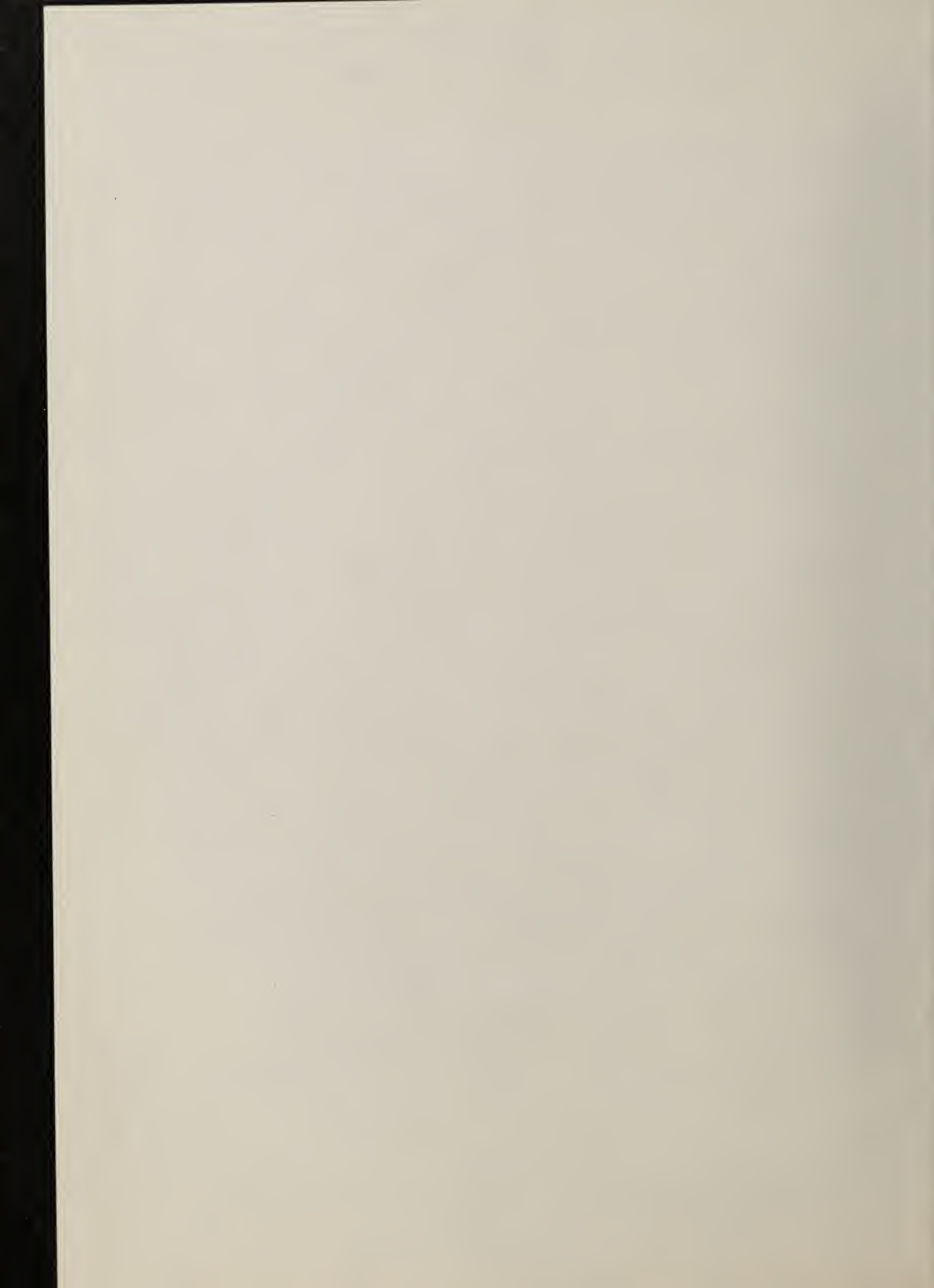




Digitized by the Internet Archive  
in 2018 with funding from  
Harvard T.H. Chan School of Public Health

<https://archive.org/details/harvardschoolofp1961harv>





[illegible]

CLASS OF 1961

80 physicians, 2 dentists, 4 nurses, 6 social workers, 10 nutritionists, 7 engineers,  
5 statisticians, 1 veterinarian, 1 bacteriologist, 1 health educator

The Class of 1961, Harvard School of Public Health,  
acknowledges with gratitude the support of  
**WINTHROP LABORATORIES**  
whose generous considerations have made possible  
this Book-of-the-Year

## *Foreword*

CHALLENGES! What is unique about the year 1961 that elicits from this year's class at the Harvard School of Public Health a Book-of-the-Year called "Challenges"? From a basic consideration of the role of a yearbook, our attention was focused on the importance of a chronicle of progress. What better way of measuring work being done than that of defining resistance encountered and the distance through which we are able to move it? This mechanical definition of work may be applied equally well to problems of public health, where the resistances are the individual challenges each of us face, and the distance traveled is that degree to which we are able to overcome the inertia of the challenge and move ahead with it.

This year we have set out to define some of these individual and collective challenges. The result is presented here in the belief that all of us might benefit from sharing our perspectives on problems of public health, and the belief that a yearbook should be more than names and pictures. To emphasize the change in content we have modified the name from "yearbook" to "Book-of-the-Year".

We may consider challenges past, present, and future. Those past may linger to the present and promise to persist into the future; these especially should we contemplate constructively. Those of the past which have been met should be studied as models for application to present and future problems. Our book begins by recalling some pioneer work in meeting challenges in public health and ends with some of the insights and glimpses we have into challenges of the future.

The bulk of the book, however, deals with the challenges of the present which have brought us here. Their nature is varied, their magnitude profound. No doubt many of them will continue to challenge mankind for some time. Yet only by acquiring tools for dealing with them can we hope to meet them productively and offer any advances. We present here some perspectives of present problems as seen by several students and departments of the school, with the retrospective and prospective views of several faculty members. Generally these perspectives provide complementary ideas and appraisals; their differences reflect the need for further investigation.

Finally, we include pictures of the student task force here, with their permanent addresses, as completely as possible, that we may all have opportunity to maintain the contacts of this year. With the pictures are additional summaries of personal data and many individual challenges, ideals and goals, many not covered at length in essays. This section concludes with a brief chronology of our year at H.S.P.H., including life at International House, and some of the lighter, more memorable moments of mirth, verse and quotable quotes.

What we have, then, is a point prevalence of challenge as seen by a small, non-random sample of people drawn from the medical and public health universe. If "Challenges" serves at all to unify our efforts and understanding and to encourage each of us to formulate and face creatively our individual challenges in relation to those facing others, then this Book-of-the-Year will have justified itself.

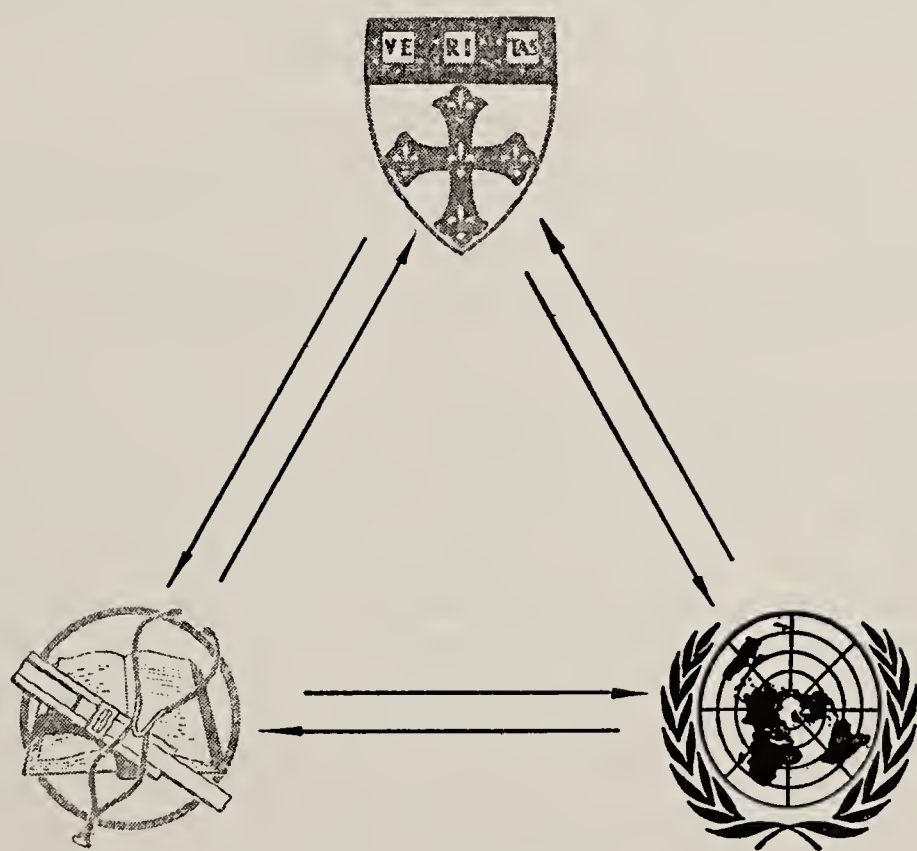
## *Preface*

I feel greatly honored to be allowed to read the essays written by the students in the Harvard School of Public Health. One cannot help being deeply impressed by these essays. They reflect the dedication that these young men feel. They come from all nations of the World, and it is evident that mostly they will return to teach what they have learned at Harvard. One envies their enthusiasm, and their youth, and the busy, happy time they have ahead of them.

*Boston, 3 April 1961*

*Roger I. Lee, M.D.*

(To Dr. Roger I. Lee, the challenges of public health were such 40 years ago that he initiated the plans to establish a graduate school of public health at Harvard. He was chairman of the organizing committee and Acting Dean of the new Harvard School of Public Health, 1921-22. A graduate of Harvard College ('02) and of Harvard Medical School ('05), Dr. Lee is an internationally renowned practitioner of internal medicine who was Henry K. Oliver Professor of Hygiene at Harvard, 1914-24, and a Fellow of Harvard College, 1931-54. He will be 80 on August 12, 1961.)



## *Challenges Past*

To introduce us to "Challenges Past" we have invited each of the three men retiring from the faculty this year to consider challenges they have faced and met. Professor Philip Drinker and Doctors Hugo Muench and Donald Augustine have each given us a different perspective.

Professor Drinker relates a challenging personal history that encompasses the evolution of a department and of the H.S.P.H. itself. This year, after forty years of service to Harvard, Professor Drinker is retiring to his New Hampshire farm, where he anticipates more time for his family and hobbies but also for writing and consultation work. His students, especially those who have this year had the privilege of sharing International House with him, will remember his earnest devotion to helping his profession and all people.

### *Forty Years in Review*

by PHILIP DRINKER, CHEM. E.

*Professor of Industrial Hygiene and Department Head*

I am honored that your class should ask me to reminisce a bit and to give you a short account of the development of our Department of Industrial Hygiene.

At first we were known as the Department of Ventilation and Illumination. This was mainly to identify us as engineers. As such identification gradually was accepted, we became the Department of Industrial Hygiene.

We have always had and have always needed close association with Physiology. From time to time we have wanted biochemists and pathologists. Being in a medical center, we have been able to get this needed help without the formality of asking persons in these other professions to become permanent members of our staff where they would be surrounded and outnumbered by engineers.

Today our department is joined with Physiology, and Sanitary Engineering to form a Division of Environmental Hygiene. Together, we embrace a very much wider field than any of us visualized at the time the School of Public Health was started.

I joined the Department of Applied Physiology in the Medical School in 1921. The S.P.H. was being planned, but was not then a reality. We had no building of our own and no separate faculty. In a few years we had acquired, through the Rockefeller Foundation, our present building which had been the Infants' Hospital. The basement was assigned to me to develop for Industrial Hygiene. The trunk storage room we made into an air conditioned room; the one room with a floor drain we made into a dust chamber and built its walls of large glass plates set in sheet metal. This was looked upon by the "powers that were" (of parsimonious Yankee descent) as an unwarranted bit of lavishness until it was pointed out that the glass was already there as a heritage from the Infants' Hospital where it had formed partitions on the wards.

The Chemical Laboratory was the old kitchen of the Infants' while my office was the House Officers' dining room. The old kitchen had a ventilation shaft to the roof which we used for a hood vent.

The building itself had an air conditioning plant in the basement which they rarely used as it was considered too expensive to operate. We took advantage where possible, of their old ventilation ducts but in one case with ludicrous results. We were running, with my brother, the late Dr. C. K. Drinker, Professor of Physiology, some experiments on

excretion of zinc by animals ingesting known amounts. Excreta were taken down to dryness in the chemical hood. Professor E. B. Wilson, then head of the Department of Vital Statistics, complained that the odor in his office was fearful and awesome. Naturally we investigated and concluded that the professor was restrained in his comments. We found that the duct work connections were crossed.

An early research problem arose from our close association with the Children's Hospital. Their Dr. Blackfan wanted a careful study made of the effects of temperature and humidity in the care of prematurely born babies. Our late colleague, Professor C. P. Yaglou, joined our staff, and we equipped one ward and then a second with air conditioning. After a couple of years, Yaglou had enough data to show that body temperature control of the infants could be stabilized by good temperature and humidity control and that mortality was thus reduced. The principles developed by Yaglou and Blackfan resulted in a standardization of the care of these infants and subsequently in the development of individual cribs, air conditioned, instead of the more cumbersome air conditioned wards.

Dr. Alice Hamilton, the first woman appointed to Harvard's faculty, was one of my venerated colleagues. She is now 92. She was a pioneer in industrial toxicology and a personal inspiration to many who entered the field of industrial hygiene, either as physicians or engineers. She inspired studies on dust control in various industries such as granite cutting, felt hat manufacture, artificial leather, and smelting of lead and other non-ferrous metals.

She helped my brother start an international paper, the *Journal of Industrial Hygiene* in 1919. The editorship of this journal later fell to me and was continued as a Harvard enterprise until 1949 when it was joined with an A.M.A. publication and subsequently called the *Archives of Industrial Health*. I continued as Chief Editor until last October, rounding out a quarter century in this position.

The development of the Iron Lung came about as a combination of stimuli from pediatricians and from industry. Dr. Blackfan of the Children's Hospital asked us to help in the treatment of children with respiratory paralysis from polio. At the same time the public utilities of New York wanted help in developing methods of applying prolonged artificial respiration for men severely gassed with CO or paralyzed by electric shock. One day in the winter of 1927 I got my colleague Louis A. Shaw to try with me a very simple method of artificial respiration on a cat which was under curare and anesthesia and would have been sacrificed at the end of the experiment. Our attempts at giving the paralyzed animal prolonged artificial respiration worked perfectly and I then had no difficulty in getting our friends in the public utilities to give money enough to build a man-sized respirator, subsequently named the Iron Lung by an imaginative reporter. This is one experimental venture that had a good ending and it is pleasant to acknowledge our debt to industrial friends as well as to the Children's Hospital who helped guide engineering hands through channels heretofore thought to be the exclusive property of the medical profession. In our experience, the medical profession has welcomed warmly our encroachments, especially when they realized that diagnoses were outside our field of knowledge and that we would help but not direct maneuvers involving treatment of patients.

Our department has been responsible for the early development of standards of air purity for industry, commonly called today Maximum Allowable Concentrations. We are always being asked by industry to set toxic limits for impurities. Such standards are now published annually, and include a wide variety of gases, vapors, and dusts.

My colleague, Professor Leslie Silverman, will soon be head of our department. Among his accomplishments is the development of our Air Cleaning Laboratory. The purpose of this laboratory is to control and even eliminate aerial garbage whether it comes from industry, from automobiles, from domestic chimneys, or from the stacks of locomotives and from power plants. Now known all over the industrial world, this laboratory was established by Dr. Silverman at the instigation of the U. S. Atomic Energy Commission and has been used by the Iron and Steel industry for help in solving some of their air pollution problems. It is now 11 years old, and will have an important place in our work in the foreseeable future.

We are very proud of the fact that we have graduates in industrial hygiene in the major industries of the U. S. and abroad. We have alumni in many state industrial hygiene bureaus. It is always a source of great pleasure to visit them but perhaps the most flattering thing that can happen to us as teachers is when graduates ask our help in some problem that has arisen in connection with their job. We, who are now graduating into retirement, salute you who are graduating from Harvard.

Since 1924 Dr. Donald Augustine has served the School in the Department of Tropical Public Health, as a teacher, research scientist and consultant to many national and international bodies. Especially noteworthy has been his work and continued interest in management of the hookworm, about which he writes here. In this paper Dr. Augustine's selflessness of dedication is clearly illustrated by his granting of credit to many but eschewing it himself.

*One of Yesteryear's Public Health Problems—  
Some of Its Influences and Contributions*

by DONALD L. AUGUSTINE, S.D.

*Professor of Tropical Public Health*

THE YEAR was 1899, the place Puerto Rico. On August 9 of that year this island was practically devastated by a hurricane. In the wake of this storm came a period of prolonged and violent rainfall. The country folks, particularly the peasants, el jibaro, were left without shelter and with little or no food. The misery of these people who for years suffered from severe anemia was now beyond description. They were sick, so utterly miserable that they could not be more so. Municipal governments were almost wholly disorganized and incapable of extending any aid.

Dr. Bailey K. Ashford of the United States Army was ordered to establish a field provisional hospital for the purpose of accommodating at least some of the thousands of sick jibaros. Good and abundant food throughout 3 months utterly failed to influence their condition. A study of blood smears excluded malaria, but differential counts of the leucocytes showed a general eosinophilia which suggested the possibility of a widespread parasitic worm infection. Fecal examinations were made, worm eggs were discovered, an anthelmintic was administered to a typical case with the recovery of worms recognized as hookworms. Ashford immediately sent the following telegram to his Commanding Officer:

Ponce, November 24, 1899.

Chief Surgeon, San Juan:

Have this day proven the cause of many pernicious progressive anemias of this island to be due to *Ankylostomum duodenale*.

Ashford.

The discovery of hookworm disease in Puerto Rico was soon followed by the discovery that it also was widely prevalent through the rural areas of our southern States. Health Services initiated campaigns against the parasite. The Rockefeller Sanitary Commission was established for the specific purpose of eradicating hookworm disease. The activities of this Commission in the southern part of the United States led to extension of hookworm control effort to rural areas throughout the world.

Heretofore, public health services had been designed for the improvement of the health and comfort of the city dweller and to protect the city from epidemic disease; they did not extend into the countryside. The foundation of rural public health was laid when it was realized that hookworm disease was a reality, and that it constituted a serious menace to rural health and prosperity. It marked the awakening of health consciousness of rural areas.

Hookworm disease was recognized long before its discovery in Puerto Rico. Late in the 19th century it was known to be the cause of a severe anemia among the workers in the construction of the St. Gotthard tunnel in Switzerland. The known vermifuges proved to be worthless. An eager and competitive search began immediately for an effective drug. Our present accepted drugs for hookworm infection result from the introduction of carefully-planned studies with critical testing on experimental animals. The methods remain essentially the same today in the search of new anthelmintics. Empiricism was forever doomed.

Prior to the discovery of hookworm disease in the United States, parasitology was primarily a field for academic graduate study. With the recognition of hookworm disease in the United States, lectures in parasitology were started for medical students of Georgetown University, the Army Medical School and Johns Hopkins University. Charles Wardell Stiles, eminent parasitologist of the day, emphatically stressed the possible existence of wide-spread hookworm disease in the United States and cautioned these students that if they found cases of anemia in man, the cause of which was not clear, to consider the possibility of hookworm disease, make a microscopic examination of the feces and look for eggs of the parasite. Stiles also introduced the subject in medical schools of North Carolina, Georgia, and Louisiana.

In the initiation of a global program against hookworm disease, it was early recognized that competent personnel directors were not to be found — none was even trained. A combination of medical and public health training was obviously imperative. Accordingly, the then International Health Board of the Rockefeller Foundation asked the Johns Hopkins University to assume responsibility for establishing a School of Hygiene and Public Health for which the Board would supply funds for buildings, equipment, and maintenance. Teaching and research programs were provided and with them the founding of a new scientific periodical, "The American Journal of Hygiene", to record the results of the researches. Within the next few years other schools of public health were established in this country and abroad — another direct benefit developed from the fight against the hookworm.

We can justly ask the question as to the extent of the hookworm problem today. There is no doubt in my mind that there are fewer cases of hookworm disease now than at the beginning of control measures. Actual disease now appears to be rare within the United States. But I am also sure that the global distribution and prevalence of hookworm infection has not materially changed.

At the Annual Meeting of the American Society of Tropical Medicine and Hygiene, 1956, in New Orleans, Dr. Norman Stoll of the Rockefeller Foundation participated in

the Symposium on Helminthic Infections as a Cause of Disability and Disease. In his introduction Dr. Stoll spoke of the Rockefeller Foundation's world-wide attack against hookworm disease which began in 1909. He noted that the attack against hookworm also brought a measure of relief from ascaris and whipworm infections. He then remarked, "Be it remembered that these three — hookworm, ascaris, and trichuris — account for almost three-fourths of all the helminthic infections of mankind. But this is now three or four decades later. The great push tapered off. With the outside spur to action removed, the control programs and interest in them sagged. If I am not mistaken, except for desultory efforts here and there and now and then, and with what I may call minor exceptions of more permanent relief, hookworms and other vermes in man are as pandemic and numerous as ever, and as damaging. How different this outlook from that in malaria, for instance, with its new slogan of 'world-wide eradication.'"

Although the hookworm has not been eradicated, the hookworm campaign was by no means a failure; through its influences and constructive developments it has done more than any other agency to advance rural public health.

Dr. Hugo Muench this year retires "again;" in 1946, when he joined the faculty of the H.S.P.H. as head of the Biostatistics Department he had just completed 25 years of service with the Rockefeller Foundation, International Health Division. The past fifteen years have demonstrated his extraordinary skill as a teacher but he is equally respected by his students as a model of a man of science and humanity.

### *How to Live to Retirement*

by HUGO MUENCH, M.D., DR. P.H.

*Professor of Biostatistics and Department Head*

A certain amount of interest has lately been displayed in the methodology of applied gerontology; especially that part dealing with the problems of retirement. Evidently, these troubles will not arise unless an individual is alive at retiring age, so that the first step in analyzing the problems is to assure his arrival at the starting gate. The following set of maxims is arranged for the benefit of those who, for one reason or another, wish to be retired alive.

1. Genetic factor. Geneticists will tell you that, for long life, selection of long-lived ancestors is important. Anybody can find some nonagenarians in his ancestry somewhere. Select them.
2. Mobility. Remaining too long in one situation leads to ossification, as in the case of the oyster. Be sure to move around, and to change your chair, apartment or job frequently.
3. Security. On the other hand, frequent moves result in frustration, as in the house fly. Stay put as much as possible.
4. Worry. This may easily lead to hypertension, myocarditis, or fits of black despondency. Worry is frequently caused by responsibilities which are beyond one's capacities. Play safe and refuse to accept any responsibility whatever at any time.

5. Fatigue. This reduces resistance to a number of infections, including tuberculosis, poliomyelitis and certain dermatoses. Two kinds of fatigue must be distinguished:

(a) That due to recreation is largely beneficial and should be encouraged.

(b) If the result of work, it is most serious and may rapidly lead to fatal outcomes.

The best way to avoid work fatigue is to eliminate work. If the threat of work arises, protect yourself by finding someone else to do it.

6. Nutrition. Nutritionists insist that good basic nutrition is essential to longevity (if nutrition is *too* good, it will shorten life). Certain basic principles must be observed: the diet must contain, among others, fats, proteins, carbohydrates and assorted vitamins and salts. This is true only within limits: eating fats leads to atherosclerosis, proteins in the diet put a load on the kidneys, intake of carbohydrates is the first step in developing diabetes, and salts and vitamins may lead to many deplorable conditions. Some of this may depend on which nutritionist happens to be talking.

There are many other maxims that could be added, but this will serve to give a general idea of the necessary areas of investigation — as well as of their relative importance, and the importance of the subject matter as a whole.

### *The Rubbish-Yard of Omar*

A book of tables underneath the bough,  
A sliderule, calculator and then thou  
Beside me reading figures off the sheet —  
Ah, wilderness has nothing on us now!

The moving finger writes, and having writ  
Moves on, but not before it leaves a bit  
Of information to be coded on a card —  
Ah, well: the Greeks had many words for it!

Come, fill the cup, and in the fire of spring  
The worksheets of our latest project fling.  
A while ago it was a good idea,  
But now it seems it wasn't quite the thing.

Ah, fill the cup — what boots it to repeat  
That never fact and expectation meet?  
The interval that bounds our confidence  
Is just a snare to catch unwary feet.



H. M.

## Challenges Present

### *Desafío!*

I LOVE the motto chosen for the 1961 yearbook. It is a challenge in itself: it takes courage to write down and commit ourselves, our ideals (the spiritual forces that move us), our reasoning, and our knowledge, to give the future generations a frame of comparison. We hope that when our shapes fade away our thoughts will stand strong.

This book keeps pace with our lives because they are by our own will lives of challenge: first the decision to devote ourselves to help our fellowmen to fight disease, misery and human suffering; later the painful process of learning to teach others how to help themselves; next, learning to recognize the new shapes which threats will take as the ecological conditions of human beings change; later, the learning of orientation: learning to deal with the social conditions of our underdeveloped countries, learning to do a job without being noticed and without expecting any reward except ethical and intellectual satisfactions; learning to work in international cooperation. And lastly, learning to keep in mind that apart from a few societies where other diseases also count, the biggest present-day health problems of mankind are malnutrition, infant mortality and population explosion, infectious and parasitic diseases, sanitation, and the threat of annihilation from within.

We have the methods to cope with some; we have to develop methods to cope with the others.

After the end of this year we hope to spread all over the world to put all this knowledge into action. That is our motivation and our desafío (challenge)!

José M. Vanella, M.D.

Dr. Vanella's essay aptly introduces this section emphasizing *present* challenges. The next presents a broad challenge to all of us from the particular perception of an anthropologist. Following Dr. Hunt's essay, a group of papers dealing with education in medicine and public health, both in the United States and elsewhere in the world, focus our attention on changes needed in both teaching and administration.

### *A Physical Anthropologist Looks at Public Health*

AT the Harvard School of Public Health, I feel a sense of vocation in my fellow students which is most inspiring. This corporate sentiment is rather unlike what I have encountered in the more diffuse and uncommitted worlds of Harvard's Department of Anthropology and of the Forsyth Dental Infirmary. Perhaps the field of public health represents a more exact balance between scholarship and a concern for human welfare than is usual at this university. At any rate, human health and welfare have an ancient evolutionary past, and through this year I have often ruminated on man's lot both in remote antiquity and in the uncertain future.

I submit that the first million years of human existence brought man through climatic cataclysms and a tremendous increase in his psychic and technological prowess. When we first encounter the remains of modern man, he was a robust but short-lived social creature, living in small, scattered groups. Over much of the Old World, his numbers were perhaps 1/1000th of what they are now. Some of the physical deformities which we know today such as misshapen faces were rare, and my own studies show that even now the human face shows a more harmonious pattern of growth when the teeth wear rapidly as in societies with simple, high roughage diets than is usual otherwise.

Despite this facial harmony of early man, skeletal deformities were not unknown. Even badly crippled people sometimes survived from birth to middle age. The bones teach us, then, that altruism and kindness are probably very ancient in man — along with murder and cannibalism.

Civilization has preserved this ancient polarity of good and evil in man, but added new elements of natural selection to the long-continued trends which preceded the founding of nations. I think, however, that one can exaggerate how different Europeans are genetically from the cave artists of ancient France and Spain. We differ from them in having impacted wisdom teeth, rounder heads and lighter skeletons, but very likely these modern peculiarities have not arisen through important changes in civilized gene pools.

Nevertheless, to an evolutionist it would seem that man is now far out of his original ecological element. If there is anything to be learned from the study of other social mammals, it is that a thousandfold increase in population density can have profound effects on the individual life cycle. John J. Christian, in a chapter to appear soon in a book called *Physiological Mammalogy*, shows that a great many physiological feedback mechanisms operate at quite different levels in crowded conditions than otherwise. In animals such diverse reactions are recognized as adrenocortical overactivity and depletion, hypoglycemic shock, susceptibility to lice, trichinosis and other infections, fighting, torpor, depressed libido, frequent intrauterine resorption of embryos, failure to lactate, and decreased production of antibodies.

As the demographic crisis creeps up on us, some of these phenomena may become of great interest to epidemiologists as they become more prevalent in man. I do not doubt that the education of workers in public health will change its emphasis as needs change. Much research needs to be undertaken on the psychic and somatic effects of social crowding, even to questions of whether individual and group differences in the tolerance of these conditions exist.

All the basic medical sciences will come to look much more like extensions of genetics than they do now. More epidemiologists will study the prevalence of deleterious — and even beneficial — genes than they do now. The demographer by then should have far more sophistication in understanding why fertility is so variable in man. My suspicion is that there is far more to this field than a mere preoccupation with infanticide, contraception, and abortion, and that a fascinating new realm of possible investigations exists on the psychosomatic biology of human fertility. Both theoretical and applied knowledge of this field may be a matter of life or extinction of our species in the long run. I should like to think that we can manage our numbers and destiny a little more rationally in an ultimate sense than does the lemming. To me, no more important responsibility has ever fallen to workers in human health and welfare.

Edward E. Hunt, Jr., Ph.D.

## *The Medical Challenge of the Community*

ONE of the more subtle, yet real, challenges facing public health, at least in the United States, concerns the approach used by undergraduate departments of public health and preventive medicine in properly preparing students for their role as community-minded physicians no matter what, if any, their specialty pursuits may be. There is little doubt that, in general, U.S. undergraduate teaching in this field has been mostly mediocre, often dull, and is, therefore, frequently regarded as of minor significance by most medical students. There have been several reasons for this, but one important one has been the failure to use properly the community as the subject matter around which the teaching should center, perhaps by having students participate in departmental service and research in the community. Specifically, failure to utilize the community as a "laboratory" for field research, together with failure to teach the significance of the community in the medical student's future, have contributed to making teaching endeavors lifeless.

Increasing lip-service is being given to the importance of the family doctor by seers of American medicine. Continued emphasis on specialization, loss of prestige, desire for the advantages of urban living, and a less favorable time : remuneration ratio have denigrated the idea of general practice. There is nonetheless a decided need to increase the quality and quantity of family physicians. One very great quality, no less important than good training in the scientific practice of medicine, is a thorough grounding in knowledge of the community, which should be undertaken in medical school. We need more physicians who, like Pickles, can look at their community and see it as a rich source of epidemiologic data which they, as life-long professional residents, can use as stimulating research material. We need increased communication between private or group practitioners and departments of health, and a full mutual appreciation of their respective roles in caring for the public's health. Increasingly, and this is a lesson that we can learn from underdeveloped countries, we need to have an emphasis on the essential unity of preventive and clinical medicine. We need to have physicians with a social consciousness which will motivate them to keep abreast of the world of medical economics as well as they keep up with the developments of medical science. The work of W.H.O. and allied international health agencies should never be left out of the teaching program or relegated to a hodge-podge of miscellaneous didactics.

Perhaps a solid nudge in medical school, such as participation in a community health project would provide, might stimulate the student to carry a lasting interest in public health throughout whatever medical career he chooses.

Hugh Fulmer, M.D.

## *Challenge of Medical Education in India*

WHILE thinking about the challenges in public health medicine in my home country, my mind gets confused because of the multitude of such challenges flashing before my eyes. These challenges extend from the area of conventional public health such as communicable disease control, environmental sanitation, etc., aiming at the reduction of death rates to the more modern concepts of public health like population control aiming at the reduction of the birth rate and also subjects such as medical education. However, in this essay I would confine myself to only a narrow area of the problem.

To me, it appears a great challenge to train physicians for India who are aware of the health needs of the country with sufficient background in medical ethics and adequate skill and competence in the care of healthy and sick persons and communities.

In India, communicable diseases are even today responsible for tremendous morbidity and mortality. It is a matter of shame for the whole medical profession of India to note that people of our country are still today dying like insects due to diseases like smallpox and cholera. Many factors can be enumerated which are either directly or indirectly responsible for the perpetuation of the aforementioned plagues in India; these are out of the context of this paper. Neither do I intend to draw up a detailed program of action to solve the community health problem. I am interested here only in one out of the whole gamut of causal factors that perpetuate the aforesaid diseases, i.e., the etiologic role played by many of our doctors in the perpetuation of these diseases. How much better it would be if we could possibly broaden our outlook and the outlook of our colleagues so that such health problems as exist now and the health problems that will develop in the future can be attacked by the entire profession and not by a few isolated members.

The problem of providing up-to-date medical care to the population in the face of rapid advances of science and growing specialization is a tremendous challenge to public health and medicine in my country. So long as we are not able to provide such care to the villager in the remotest corner of the country, he will persist in going to the medicine man and will have to put his faith in magical medicine.

What is the real problem in providing medical care? Is it the shortage of doctors? Although there is a slight shortage of doctors, it is not the chief factor accounting for the non-availability of doctors for care of a villager. The problem is more that of distribution than shortage of absolute numbers. The doctors have agglutinated in towns and cities leaving the villages, where 80% of the people live, without doctors. In the process of agglutination, while the doctors are the antigen, the antibody is a complex consisting of various factors including material comfort, paying capacity of the population, place and type of training the doctors get during their student career and the models they see as students (the faculty members of the school) and the social and cultural influence of the society from which the student population is drawn. Therefore, the problem is to break up such conglomerations of doctors in cities.

In both the instances given in the preceding paragraphs, it is quite clear that the blame is not so much the doctor's. Rather, his behavior is forced by circumstances. However, for future action, it should be remembered that it is easier to make doctors with desirable attitudes, knowledge and skills than to try to mend the ones who have already become too hardened to countenance any change. Hence, special attention must be paid at the teaching centers, i.e., the medical colleges in India. They must choose susceptible students and give them the right training. The Government, universities, faculty members of the schools and the medical profession as a whole must take an active part in this process. Establishing departments of social and preventive medicine will not suffice because these departments can serve as catalysts only if the proper substrate is present.

Satyabrata Kar, M.B., B.S.



## *I. Comprehensive Health Care and the Problem of the Medical Doctor*

As medicine progresses, the field of medicine becomes deeper and more specialized. On the other hand, when various countries are directing toward comprehensive health care programs either through national health insurance programs or through national health services, competent well-qualified health officers and general practitioners are increasingly needed to carry out this job. These three categories of medical doctor, specialist, health officer and general practitioner, have equally important roles and positions in comprehensive health care programs.

A general practitioner is a key person in taking care of individual health or family health, serving as frontline defender of health to a family. In the same way, a health officer is a key person for taking care of the health of the majority of people, serving as frontline defender of health to a community. But in various countries of the world at the present time these two categories of medical doctor are in much lower social status than clinical specialists. There is an increasing tendency for many young medical graduates to be some kind of specialist. In my country, the turnover rate of health officers of health stations is quite high, and sometimes to be health officer means to be a future general practitioner in that locality. Why? Is it due to the differences of income, prestige, future prospects, or opportunity of advanced training? Or is it the trend of highly developed modern medical education? It is true that these fields are less attractive to medical students than fields of specialists. Why don't we make them more or equally attractive through reorganized medical education system and well adapted health care projects? The time when general practitioners either in the preventive medicine field, or the public health field will play an important role in taking care of the majority of the people in the country is coming. There will be no single solution. This problem should be studied thoroughly by medical societies, medical teaching groups, health agencies, policy maker of the government, and representatives of the people concerning its cause and effect, in order to solve this complicated problem.

I don't mean that the roles of specialists are less important. What I would like to emphasize are that the services of health officer and general practitioner cover a majority of the people and that they know more about all the family members and their physical, socio-economic, and emotional environments. For this reason the nation needs these kinds of competent and able doctors for better services to the people.

## *II. Suggestion on the Course of "Global Health Problems"*

As one way of challenging various health problems facing world public health, I would like to suggest that the Harvard School of Public Health initiate the course of "Global Health Problems" as an interdepartmental course in the spring term.

The Harvard School of Public Health has international reputation in leading the teaching of important health topics in the world. Professors here are internationally well known and international-minded. Most of the courses are designed to cover some problems in foreign countries. But these problems are only partially touched or discussed in the special subject courses and are not integrated with other courses. A course with the title of global health problems would cover main health problems facing the world, explain their trends, integrate each to the other, generalize the facts and would suggest

some solution or some principles for future solution. A suggested outline of the course would be the following:

1) Introduction — definition of various categories of the country in the world in terms of its economic, industrial development. General review of some economic, educational, cultural and political factors influencing the health of the people in different countries.

2) Global Demography — population growth, its trend, its causes and effects. Principles of solution from various aspects.

3) Global Epidemiology — differences of distribution of various main infectious and non-infectious diseases in relation to their physical, socio-cultural and economic situation, its trends and principle of control.

4) Global Health Organization, Services and Medical Care Program — different patterns of health organizations, health services, and medical care programs in the world, their international trends, model of health centers or medical care projects in different categories of the country.

5) Global Medical Education and Training of Public Health Personnel — the proportion and number of medical and public health personnel in the world, situation and trends of medical education and training of public health personnel in various countries, some solution to meet the needs of medical demand of the country.

6) Global Nutrition

7) Global Sanitation

8) International Health Problem of Atomic Bomb

There are still many topics which are not mentioned and can be included in this course.

I am sure this course would not only attract foreign students as well as American students who are interested in international health, but also stimulate faculty members and foreign graduates to conduct international cooperative research work on global health problems.

Kung-pei Chen, M.D.

### *A Basic Theory of Health and Disease*

**D**URING this year at Harvard an approach to a basic theory of health and disease has developed in my mind. In general, it has arisen from ecological concepts, viewing health as a relative resultant of the interaction of host, agent and environment. In the process of learning to view health in this perspective I became increasingly concerned about the way in which medical students are not being given the benefit of this basic theory, but are being trained largely in a trade. The result is, of course, that the facts they are taught have a half-life of approximately five years at least, with respect to methods of therapy. Although they receive a sound theoretical approach to the basic medical sciences, largely because each of these exists as an independent scientific field, they do not receive anything comparable in their clinical years. As a result they are unable to adapt easily to rapidly evolving modes of therapy and changing patterns of medical care. I suggest that medical schools of the future must teach more of the kind of material we have had presented to us this year if we hope to produce young physicians equipped to meet the "crisis in American medicine" about which there seems to be much concern. To clarify more precisely what I have in mind, let me recapitulate the development of these ideas during the past year.

During the Fall our seminar in the Teaching of Preventive Medicine wrestled with definitions and concepts of Preventive Medicine, Public Health, Community Medicine, Social Medicine, Human Ecology, etc., and appropriate ways to teach each of these. In February, during our field trip, we visited four American medical schools which are attempting to teach these subjects in one way or another, and a number of things became apparent. First, the older the school the more difficult it seemed to be to find time in the tightly-scheduled curriculum, space in the crowded buildings and qualified personnel among the faculty for teaching these newer concepts. Time, space, and personnel were already largely committed to training students in the basic and clinical sciences of curative medicine to be practiced on a person-to-person basis. At best some clinical preventive medicine was being taught in terms of what an individual specialist could do to prevent disease in an individual patient. Secondly, there was real difficulty in each school when they tried to develop the concept of family or community as a social organism, having its own particular anatomy and physiology, and sometimes pathology. The farthest that most schools seem to go in the clinical years is to demonstrate the importance of the social environment in relation to individuals through family care clinics, possibly with visits to the homes of patients. There was almost no consideration of the health or disease of social organisms, as such. This is apparently left to the schools of public health or Departments of Social Relations, Social Psychology, or Social Anthropology.

The importance of all this was brought out during the second week of the field trip when we visited the University of Puerto Rico School of Medicine. There we found a six-year-old school caught between two opposing forces: one, the need of the island for physicians trained and motivated to practice Community Medicine, and the other, the desire to excel in teaching established specialties of clinical practice. In other words, the school was largely modeled after the best in the industrialized, urbanized United States and yet it was trying to serve an underdeveloped, largely rural island population. The irony of the situation was particularly striking when we visited one of the government health centers in which "regionalization" was supposed to be carried out in such a way that it would be ideal and serve for teaching medical students a pattern for integrating preventive and curative medicine on a regional basis. However, the doctors trying to carry on this teaching were trained in specialties of clinical practice, not the specialty of Community Medicine, and the results were quite disappointing. At this point it dawned on me that in the continental United States we were doing much the same thing, although the inappropriateness of such medical education in our country to the needs in our rural areas appears easier to rationalize. It seems quite clear that the new medical schools which everyone seems to agree we will need in the United States in the next few years must give "equal time," or at least adequate time, to the teaching of Community Medicine in addition to the teaching of individual medicine, including consideration of the prevention of disease as well as treatment in the dimensions of both the individual and the community.

A basic curriculum for one of these medical schools of the future might consist of two parallel lines of training, one pointing toward handling the health problems of individuals, and the other the health problems of groups. In order to develop the latter concurrent with the former one might start with an introduction to human ecology by an ecologist, then work through the anatomy and physiology of social units by teaching medical sociology and social psychology in the first two years. During this time biostatistics would logically be included in order to permit the students to gain the concept of the distribution of various health-related data in population groups. Then, just as physical

diagnosis is taught in the transition to clinical work, the basic principles of epidemiology could be introduced. Finally, the pathogenesis of disease in communities would be presented, leading up to its diagnosis, treatment and prevention. Postgraduate training in Community Medicine should certainly include an internship and further training in certain clinical areas of interest, but the bulk of it would be spent working with families and communities on their health problems, so that many of these graduates could qualify for their specialty board examination in Preventive Medicine. Such physicians would presumably be able to bring new skill and enthusiasm to meet the medical problems of the underdeveloped areas of this country, left unsolved by the gradual disappearance of the general practitioner and county health officer.

George Saxton, M.D.

### *What Are the Priorities of Public Health?*

THIS passing year at Harvard has been for all of us a memorable one, and for a fortunate few an unique and unforgettable experience in the harmony of international living at the International House. It was not surprising, therefore, that for some of us this sharing of different culture, customs, ideals and philosophies led to a reappraisal of our goals in public health and a careful evaluation of the doctrine and definitions with which we had become acquainted during our period of study.

The initial threat of world destruction and the secondary genetic threats that total nuclear warfare is said to possess are so profound that it is inevitable that some of us might question the inconsistencies and inadequacies of these goals and definitions of public health when viewed in the light of this threat. The fact that so great a threat to community health and survival has not been included in a curriculum designed to demonstrate methods of community protection and improvement was so striking that several of us felt compelled to question the validity of its exclusion.

We realized that to question a curriculum which in all other respects had been so admirably comprehensive, and expounded by teachers and doctors of world-wide repute might savor of ingratitude and indiscretion. Yet the challenge that nuclear war presented was so fundamental to all thought and research that a group of us have had the audacity to suggest that the Faculty give serious thought to a reevaluation of public health practice which might in future years also include this, as yet the greatest of all threats to the physical, social and mental well-being of man that the World Health Organization defines as health.

It was our proposition therefore, that the threat to civilization presented by nuclear warfare could and should be considered as a disease in its prepathogenic stage. The situation, in our opinion, had all the components of a disease entity, including an agent, which is the bomb, the virulence of which has increased astronomically over the last decade, a highly susceptible host and an environment that to date seems to be becoming progressively more favorable for a host-agent interreaction. Already we have seen minor outbreaks in Hiroshima and Nagasaki and many discussions during the current year have centered around radiation problems, which may be considered as subclinical stigmata of the disease. The end results of a host-agent interreaction are only too well known and in terms of pathological, genetic, and social effects are identical with the host changes seen in disease, differing only in the extent of the mortality rate. Road accidents

have already been studied and taught in public health as episodes resulting from environments with disease-producing attributes.

We felt that there was a specific purpose in suggesting that the growing risk of nuclear warfare was a disease process because it is only when such a phenomenon is so classified that medicine and the entire public health team will concern themselves with the problem and make the preliminary investigation needed to define the mechanics, extent and cause involved. In any disease process, research is necessary before prevention and treatment are possible. This, then, is the import of this concept.

It is natural that one must evaluate why medicine any more than the other philosophies should become implicated. Already the cream of science, theology and the political sciences are and for many years have been grappling with this vital problem. (What has medicine to offer?)

It seemed to us that there were three very good reasons why sooner or later it would be inevitable that medicine and public health would have to get involved. Firstly, the unity of purpose that exists in a profession which is geared to the physical well-being of mankind has already shown extraordinary powers of international and interracial cooperation. The international team approach to malaria eradication is but one example of this. This professional international good will is not excelled by any other discipline. Secondly, we must realize that specialists in sociology, community psychiatry and psychology are beginning to work with our medical team objectively describing and interpreting community behavior. In years to come, when more is known about group and community behavioral and interpersonal patterns, one can visualize the evolution of a form of community psychiatry which will be as effective in assisting the community behavioral deviations as it is now in relation to individual ones.

Thirdly, it is conceivable that the particular interpersonal relationship of trust and confidence which exists between patient and physician and which is paralleled only in religion might be utilized to strengthen community confidence in community medicine once it is realized that our profession is as equally dedicated to do all within its power, and by whatever means available, to protect the individual and society from a nuclear agent as it is at present towards an infective agent. Though this goal might seem idealistic, we as a group possess sufficiently strong unity of purpose that we could materially assist the many other disciplines already dedicated to this threat.

John E. Davies, M.B., B.S.  
Louis Clayton, M.D.

Medical missionaries have often brought the first elements of medicine and public health to a community, together with the challenge and comfort of spiritual experience. Dr. Lamp vividly summarizes the challenge to the missionary; Drs. Dunn and McClellan add further thoughts amplifying this challenge.

### *"To Make Man Whole"*

PREVENTIVE medicine has been defined as the science and art of preventing disease, prolonging life, and promoting physical and mental health and efficiency. The Christian physician would add yet another aspect to this statement of purpose — a spiritual dimension. "To Make Man Whole" is the charge given to the graduates of my medical school, and it is this phrase perhaps that best expresses for me the challenge that lies ahead.

The missionary medical worker rejoices in every advance in technique and skill that will serve his people — the development of sanitary facilities, the eradication of insect vectors, the fortification of the diet, and the improvement of medical care — but recognizes that the task of making man whole involves an additional approach based on the premise that man needs more than an alteration of his external environment, more even than the development of the individual's inner resources. What is required, the Christian believes, is a spiritual transformation which results in a new man with a new perspective, a new motivation that transcends in importance any mere superimposition of educational or technological change. The missionary, then, sees in his ministry to the sick an opportunity to demonstrate practically the principles of love and sympathetic understanding that will lead some of those who come seeking just such a transforming experience.

One of the most formidable obstacles in international health is the fact that health problems are so universally and almost inextricably enmeshed with magical, superstitious, and religious beliefs. To divorce oneself completely from the reality of such an association between religious belief and disease, even in our own culture, must clearly reveal a lack of sensitivity to human needs. Faced with the metaphysical and ethical tenets of an alien culture, one might choose an attitude of neutrality calculated to avoid any conflict of ideology. It would seem to the missionary, however, that the real challenge is to meet these philosophical issues in a positive way by placing one's own concepts and methods of healing within a spiritual milieu which will include an understanding of man's role in the universe, his ultimate destiny, the problem of suffering, the question of prayer and divine intervention, and the profound interaction of physical, mental and spiritual forces. These vital issues are deserving of study not only in the exotic world of far away but also here in our own society, which few will deny has gone tragically awry.

To be sure, such an approach as has been suggested here is a personal one with applications as numerous and varied as circumstances, but therein lies its strength, its effectiveness and its challenge. In a world torn with strife, tense with fear, uncertainty, and suspicion, the Christian medical worker seeks to face the challenge of the whole man by trying to provide not only the best that medical progress has devised, but to share as well his own personal spiritual experience that has brought meaning, peace, and hope into his own life.

Herschel Lamp, M.D.

### *The Missionary's Challenge*

THE EXPERIENCE of service with Christian mission hospitals for a period of twelve years has been satisfying in many respects. Some may not realize the extensiveness of the contribution that these medical missions have made for international health in the last century; nor they may not understand their potentialities for the transmission of health concepts which can materially benefit the respective countries.

Besides assuming a share of the medical care of the ill, they have involved themselves with the education of indigenous physicians, nurses, technicians, and other para-medical personnel. During the time of their service these institutions have attempted to combine technical skills with sympathy, love, and service.

Problems that are common to many in this changing world face these medical institu-

tions today. Their future success depends upon their ability to satisfy the basic needs of the countries involved. Medical care and educational processes can still be used advantageously, according to the local circumstances; but, perhaps, the greatest contribution can be along the lines of preventive medicine and health education, to supplement the efforts of the health departments. The mission hospital can extend its efforts into the current of the community, using original methods of motivating populations for health improvement. To prepare himself to accomplish these ends is a worthy objective of the prospective medical missionary.

Robert H. Dunn, M.D.

### *Unified Humanity*

THE GREATEST contemporary challenge to workers in the arena of public health is, it seems to me, one which today also confronts every human. This is the task of educating sufficient numbers of people throughout the world to assume and exercise the responsibilities of world citizenship so that world unity will be promptly achieved. It is only in the context of a unified humanity, I think, that public health workers will be able to pursue with adequate meaning and satisfaction their professional concerns with specific health problems.

I believe that the challenge, however extensive its ramifications, is, most basically, a spiritual one, involving understanding of the relationship between man and God and of the laws derived therefrom which ultimately determine the destiny of mankind, and that the requisite knowledge for meeting this challenge may be found in the writings of Baha'u'llah, author of the Baha'i Faith, who claims the authority of the chosen mouthpiece of God for our age. In His words,

“The All-Knowing Physician hath His finger on the pulse of mankind. He perceiveth the disease, and prescribeth, in His unerring wisdom, the remedy. Every age hath its own problem, and every soul its particular aspiration. The remedy the world needeth in its present-day afflictions can never be the same as that which a subsequent age may require. Be anxiously concerned with the needs of the age ye live in, and center your deliberations on its exigencies and requirements.”

I look forward to the time when many of my classmates and teachers will choose to investigate the source of the above words and to evaluate for themselves the relevance of the Baha'i message for the public health goals toward which we are striving.

Samuel G. McClellan, M.D.

The remaining student essays cover a wide range of material and territory, from problems circumscribed to a country's borders to those encompassing the whole earth; all demand attention and action that potential disasters may be averted.

## *Population Control — An International Problem*

THE FIRST and foremost challenge in public health is that disease should be considered on an international basis. Today in the era of jets, one should not consider that smallpox is a problem of India or kwashiorkor a problem of Africa, but that every disease is a problem of the world. Once this concept is taken for granted, the solution for the disease problem will become much easier.

The population problem is another challenge, particularly for my country, India. In order to eliminate it, the whole pattern — social and educational — for the country as a whole needs a change. For that, basic education stressing social medicine and the creation of a feeling for good and decent living in my countrymen is the main need.

If all countries of the world would do an experiment testing whether the population problem can be solved by removing restriction on migrations, I think the answer will be "yes". This is again possible only when every problem is considered on an international basis (for which the world is not yet ready). If the feeling can be infused, I think a lot of the many troubles can be solved.

Prem Vir Gulati, M.B., B.S.



### *Australia and World Health*

IN the last decade or so a great change has come about in the orientation of Australian thinking. The awareness of the existence and nearness of Asia was first realized with a frightening suddenness when the Japanese armies swept through Southeast Asia and thousands of Australian troops became involved in nearly every country in the "Near North."

In the immediate postwar years the remarkable support for the Indonesians in their struggle against the Dutch was indicative of the sympathy aroused in Australia for the various nationalistic movements in the Asian colonies.

Travellers who had formerly been content to make the traditional pilgrimage to "England and the Continent" now discovered even more fascinating stamping grounds on Australia's doorstep.

But the greatest factor in the "Asianization" of Australian opinion has been the arrival of thousands of Asian students to study in schools and universities either under the Colombo Plan or private sponsorship. The majority of them have been encouraged to live with Australian families rather than in boarding houses. These students of whom there are some 10,000 at present have become extraordinarily popular, and the number of Australians travelling to Asia during summer vacations with Asian friends or in delegations grows yearly.

As a result of these contacts the Australian student body has found it necessary to reconsider certain governmental policies relating to Australian-Asian affairs, notably those concerned with the restrictive immigration laws. A nation-wide student referendum found a majority in favour of introducing some system of controlled Asian immigration and the resulting resolution has been echoed by most religious and philanthropic organizations in the country. In the last few years a small number of Asians have been able to take out citizenship under certain categories and it is to be hoped that further such categories will be introduced before long.

Reports of delegations sent to various Asian countries each year by the National Union of Australian University students and different cultural, technical and medical organizations; in addition to the views of volunteer graduates returning from three years in Indonesia (Australia's diminutive "Peace Corps"), have created an awareness of the problems facing these countries in most fields of endeavour. As a result, the study of Asian cultures and languages, tropical medicine and public health, and tropical engineering and architecture, etc. is attracting more and more Australians.

Also, tropical public health has become increasingly important with the rapid development demanded in the Trust Territory of New Guinea and Papua; and the beginnings of expanded settlement in tropical Queensland and the Northern Territory where, some day, may eventually develop a huge rice growing region producing food for the countries to the north.

In short, Australia's obligations in the field of public health in the Western Pacific Region are now regarded as considerable and there is no doubt that it is of the utmost importance that these obligations be met.

Anthony C. Adams, M.B., B.S.

### *Public Health in the U. A. R.*

AT the dawn of July 23, 1952, a historic event took place in my home country, Egypt, the Southern Region of the United Arab Republic. A bloodless revolution was staged in Cairo terminating a despotic reign and proclaiming a new republic. Since then the Republican government has been facing countless challenges. The most important are those challenges concerned with the health and welfare of the Egyptian villagers who form the big majority of the population. The broad lines of the governmental policy to meet these challenges are to increase the arable irrigated areas and agricultural production, to promote and decentralize industry and to promote education and health services.

The health services are regionalized and the country is divided into twenty-two independent regions. The primary health centres provide curative and preventive and public health services to the villagers at the periphery of the regions, with primary and secondary hospitals located towards the centre of the region. For graduate training of public health personnel the High Institute of Public Health was established in 1956 in Alexandria.

In the field of my work, as an UNRWA medical officer serving the refugees, there are several challenges. In the Middle East more than one million people lost their homes in the territory that is now Israel as a result of the Palestinian War during 1947 and 1948 and took refuge in neighboring areas. When hope had to be given up of finding a prompt solution to the problem of these refugees, the General Assembly of the United Nations

established the UNRWA which started its activities in May, 1950. The UNRWA has a day-to-day task of providing the refugees with food, shelter, education and medical care and also a long-term task of assisting the refugees to become self supporting. Serving such people under conditions of despair, grief and frustration, inhabiting for 12 years tents, barracks, and huts, living on minimal food in an underdeveloped region characterized by several endemic diseases, make the work of the medical officer full of challenges.

Wadie W. Kamel, M.D.



### *Nutrition in Egypt*

PROPER NUTRITION is and will be a great challenge to Egypt (the Southern region of the U.A.R.) for some time to come. Clinical and subclinical disease due to malnutrition is not uncommon. The morbidity and mortality of certain communicable and parasitic diseases are associated with malnutrition. Summer diarrhea appears to be the most serious of these, but hookworm infestation, bilharziasis and round worm are also of importance. Anemia of the iron deficiency type is associated with hookworm and with bilharziasis and malaria. In Cairo a certain percentage of young children reporting at the maternal and child health centers show frank signs of rickets. The active disease is not found in the infant old enough to play in the sun. Pellagra still occurs in some rural areas where corn is the chief food consumed. In Egypt the incidence is somewhat higher in the North than in the South.

Some things are being done about these challenges. The departments concerned directly with nutrition in Egypt are the Nutrition Institute, Ministry of Health, Cairo; National Research Council Laboratories, Giza; the High Institute of Public Health, Alexandria; the Ministry of Agriculture and the Ministry of Social Welfare. According to their recommendations two million school children benefit from meals at the expense of the government. Also an obligatory meal is provided for certain specific classes of workers and can be charged for only to the extent of half its cost. The realization that the country cannot rely indefinitely on the supply of skim milk imported from abroad led to a search for foods which could at least partially replace skim milk as supplementary foods.

The High Institute of Public Health in Alexandria offers a course in nutrition which is mainly designed for medical and public health personnel. In the near future there are plans to offer nutrition courses to other workers. Through the efforts of the Ministry of Agriculture, maize and wheat crosses which give better yield have been developed.

I feel that more can be done about the challenging problem of nutrition in Egypt. The different government ministries concerned with various aspects of the many sided problem of nutrition (e.g., Health, Agriculture, Education and Social Welfare) have to

coordinate their efforts and develop plans in cooperation. Among the most important measures to which attention should be given in developing national nutrition are:

- (a) Development and orientation of agricultural production to best meet nutritional needs.
- (b) Training in nutrition of workers from various fields.
- (c) Simple and practical measures to improve the nutrition of mothers and children through maternal and child health centers.
- (d) Enrichment of wheat, the most important staple food, consumed mainly in the form of bread.
- (e) Education of the people in nutrition to ensure that the best use is made of the available resources and to encourage the consumption of a better balanced diet.

Farouk F. Faragalla, D.V.M.

### *Challenges to Canadian Medicine*

CANADA and the United States are linked both socially and economically to the point that current *challenges* in the field of health are essentially identical. On the other hand, Canada has certain peculiar *opportunities* for leadership in certain fields of health which will become more apparent during the next five years. It is hoped that Canada will not neglect the responsibility that goes with leadership in the following:

- 1) The government-subsidized acute hospital care program is now almost completely developed in Canada. This program, and the rapidly developing chronic care and rehabilitation programs should be important models for study in the U.S.A.
- 2) During the next few years Canadians are almost certain to embrace some form of government-subsidized pre-payment of the totality of medical care. The manner of development, the activities of the medical profession in direction, the economics and the controls will be of profound importance to all concerned with this feature of medical practice in the United States.
- 3) As an important small nation in the community of nations, Canada may yet be able to exert an influence in bringing about permanent control of nuclear devices and the resulting threat to mankind. It may, however, be necessary for her to strive to assert her independence from the United States before this opportunity in such a field so important to the public health is completely lost.

In these areas misunderstandings are bound to occur on both sides of the Canadian-U.S. border; it is hoped, however, that lessons will be learned in mutual tolerance. Although the health service fields of Canada and the U.S. now may take a major divergence, in the end the unity of purpose of our western civilization is certain to bring their paths together again.



Donald O. Anderson, M.D.  
John E. Davies, M.D.

## *A New Approach in Yugoslavia*



A new epidemiological approach based on levels of prevention is needed for the most adequate solution in health work in decentralized communities and the unique health doctrine of Yugoslavia.

For integrated medicine and comprehensive medical care and public health work it is very important to have the physicians look at the health of a community both as a whole and as a dynamic process. Our goal is to have physicians who understand that the various diseases prevailing in the community are only a part of the whole health problem, yet realize that they are dynamic processes which have a starting point, a course, and an end result.

Until now, the medical faculty has been preparing the physicians for clinical practice in treating disease in some part of its course and sometimes have provided them with very highly developed techniques. But the physicians often do not realize that they are dealing with only that part of the disease process which reaches the clinical horizon, a part which is not always the most important one. They often miss the very root of the disease process, the prediagnostic phase. Of course, we are not denying the importance of curative aspects of medicine. Actually, our work should be an integrated approach to medicine including every level of prevention. On the other hand, the health situation in Yugoslavia is acute and stimulates work in prepathogenesis, especially in chronic disease.

In considering health on levels of prevention by attacking the disease in many steps in its natural history, health workers have innumerable possibilities to realize medical ideals through integration of curative, preventive, health education and other services as well as looking at health and individual as a whole.

This approach makes possible the planning of health programs in every health unit and work team on community, local, republic and federal levels. Furthermore, for health workers such an approach makes possible the covering of a whole area of problems in community health. Where we do know what to attack in the natural history of disease, we will plan to do so. Where we do not know some elements in the natural history, we will better know what to investigate, especially in prepathogenesis.

It is apparent that our role as public health workers in Yugoslavia has to be in preparing our minds (our philosophy), our techniques (our kind of approach) and our new tools (our methodology) and temporal orientation. This must be done if we want to solve problems and be able not only to follow but to go ahead with adequacy in health organization and realization of integration and comprehensiveness in medicine.

The philosophy and methodology of the Harvard School of Public Health and work in the Federal Institute of Public Health in Yugoslavia provide many possibilities for such a unique doctrine and approach.

Djordje Kozarevic, M.D.

## *Preservation of Our Heritage*

MOST CHALLENGES are those inviting progress, a change over the existing state. Yet what I see as one of our greatest challenges is that of maintaining *unchanged* a commodity whose infinitesimal physical size belies the magnitude of its significance, our genetic heritage.

The nature of this material which permits our orderly continuity as separate species, which gives each of us a make-up characteristic of our family in some ways but individually unique in others, and lets us pass on to our children some of our physical traits, for better or worse, is elusive; this stuff of heredity whose functional units we call genes, arrayed on chromosomes and contained within every cell's nucleus, has only in this century begun to yield some of its secrets to the fledgling science of genetics. Also in this century a new energy source has been discovered and developed — an energy present in every atom in infinitesimal dimension just as the genetic material is in every living cell. At first this new power was most mysterious in its effects, and known only to a few pioneer researchers. Then came 1945 and everyone knew — everyone knew the power of the bomb, but few knew what was becoming apparent to the geneticists and radiobiologists — the power of the individual atom's energy acting on the individual cell's nuclear material. If that cell is a germ cell for the coming generation, a single atom's mark may maim the offspring with a malformation, either obvious or hidden, to appear in later generations. If the damaged cell is somatic, such as one in bone marrow, the atom's mark may be in the induction of disease, such as leukemia.

The probability of a single atom's energy, in the form of a ray or particle, hitting a given cell causing serious damage is very slight. But with two atoms there is twice the chance, with ten atoms ten times the chance — and there are over a billion trillion atoms in one gram of radioactive material! Considering the number of cells in the body available as targets, any one of which is potentially susceptible to ionizing radiation in such a way that its usual control mechanisms are disrupted, we see the risk profoundly multiplied. The startling conclusion must be: we cannot decrease the number of targets; therefore we must minimize the exposure. We must minimize the exposure by unflagging persistence and cooperative insistence that nuclear war, mock or real, be absolutely proscribed; that "testing" be returned to the controlled laboratory experiment; that further investigation be made of our environmental radiation burden and ways of minimizing it; that industrial, peaceful uses of atomic power be developed consistent with the safety of all people with regard to the disposal of radioactive wastes, and that knowing, intentional exposures be reduced to the minimum required in useful medical diagnostic and therapeutic procedures. We must take these steps in order to save our children from the fate of a malformed inheritance. The challenge to the radiobiologist is to further delineate the damages of radiation and to seek methods of prevention, amelioration and treatment. The challenge to everyone is to minimize exposure, for only through vigorous action can an "atomic peace" be ours. Control of exposure from wartime projects seems an impossibility. Thus a multidisciplinary approach to nuclear disarmament is the final challenge facing all of us.

Larry D. Samuels, M.D.

## *The Role of Public Health in Our Culture*

THE CHALLENGES of modern scientific and technological society, as found in the U.S. and emerging in many and varied areas of our world, are not of lesser magnitude in the realm of health than those faced by mankind at any time in the past. In the space of 50 years, medicine has truly become a science as well as an art, so that the prevention and amelioration of disease have become an everyday reality. Population growth, aging populations, the urbanization of culture, the environmental hazards created by man and his technology interacting with the existing natural hazards are but a few examples from the host to be considered by the health professional as he views his work.

Schools of public health have the unique opportunity and the responsibility to provide a common ground where health professionals of many disciplines — scientists, engineers, sociologists, clinicians, and all others interested and with something to offer in the struggle for the health of mankind — can observe and identify the challenges of our modern world and acquire the skills and interchange of ideas necessary to meet these challenges. The schools of public health have great responsibility to provide leadership in the sphere of health studies, and to teach the skills required to define and meet their challenges, actively carrying out pure and applied research. These are the challenges to the School: stimulation, leadership, and proficiency in transmission of knowledge and skills. The challenge to the student is no less, for he must become a disciple of the School: he must go forth and stimulate, lead, and apply proficiently his knowledge and skills in whatever his field of health activity.

I am particularly interested in the problems of services to individuals through the clinical practice of medicine. There should be no absolute distinction between prevention and therapy such as often is made today both in knowledge and in application. This is a legitimate area of concern to physicians interested in the health of the public. Much of this separation can be closed by the strengthening and development of departments of preventive or community medicine within medical schools. Schools of public health must cooperate by training teachers of preventive medicine.

Another area of personal interest is that of increasing efficiency in the delivery of health services through utilization of modern methods. Machines may present problems to man and his environment, but should also serve man's needs. Medicine has just begun to use technology to deliver health services to individuals. Work is needed in such fields as automation of laboratory examinations, record keeping, physical examinations, and mass production of certain services such as periodic examinations and screenings. The school of public health has a place of interaction between physician, physiologist, engineer, administrator, and industrialist and should be pioneering in this area.

Gordon Siegel, M.D.



## *Challenges of the Future*

What are the challenges of the future? Some have been alluded to in previous essays, but to present a clearcut exposition of what we feel are among the major areas of advance and challenge in the years to come we have invited several faculty members to present their prospective views of challenge. This represents but an arbitrary sampling of faculty opinion; further ideas are contained in the next section of the book, the departmental section. We are sorry that we were unable to give an open invitation for faculty contributions, but hope that subsequent years may offer further opportunities for expression.

### *Human Heredity and Public Health*

by GEORGE B. HUTCHISON, M.D., M.P.H.

*Assistant Professor of Epidemiology*

THE special field of human heredity is in the fortunate position of being firmly based on carefully documented observations in the broader field of genetics. In addition it is receiving benefits from advances in a variety of related fields. Although the greatest body of documented observation in the principles of heredity comes from plant and animal studies, human population studies are becoming increasingly available and informative. Recognition of chromosome aberrations associated with certain well-known diseases has opened a completely new area of investigation, concerned with recognizing the manifestations of such aberrations and discovering the determinants of this phenomenon.

What does all this have to do with the field of Public Health? This question should always be considered both at the service level and at the research level. At the service level it should be asked whether the activity in question shows promise of alleviating morbidity and decreasing mortality in the community. From the research point of view the more appropriate consideration is whether there is a particular competence in public health personnel to attack the unanswered research problems.

The two areas are, of course, not distinct. It is hoped that research in any segment of the field of medicine will ultimately benefit the control of disease. However, this train of events is frequently circuitous, and the practical benefits of research are more commonly than not difficult to discern at the time the basic advances are made. Thus several years after the discovery of chromosomal aberrations associated with diseases there is no practical application measured by either primary prevention of any disease or secondary prevention of the progress of the natural course of disease. This does not detract from the significance of the basic observations.

The service contribution of genetics, or human heredity, in public health is limited to the practice of genetic counseling. There are very few guidelines for this activity, and its background is unhappily associated with a number of ill-conceived eugenic experiments. Early brilliant work in animal and plant breeding led some to the conclusion that the same principles could be simply applied to improving the human breed. Some unfortunate application of these theories was followed by more sober thinking. The decision as to what characteristics of corn are desirable has little to do with determining what

the goal of human breeding should be. The chief role now conceived for genetic counselors is that of dispelling myth and of making factual information available to physicians. There are few geneticists who feel that they have the information required to direct the development of a genetically improved human breed.

The direction for Public Health in genetic research is much clearer, and a few of the areas of activity will be cited.

One of the prime goals of Epidemiology is to identify determinants of disease. It is perhaps true to say that heredity plays a role in the causation of every disease. The science of genetics is useful only when it is possible to get some measure of the relative importance of the hereditary factor and all other factors. In a select few diseases a single gene is involved, and the disease is present regularly in the presence of the gene. For the vast majority of diseases the case is more complex, involving multiple genes and incomplete penetrance.

A recognition of the inter-play between genetic and environmental factors in most diseases has been both surprising and rewarding. An earlier concept looked on the genetic element in disease as the limit beyond which medical therapy had no possible offspring. Today the genotype remains immutable but it is only a framework on which the phenotype is to be constructed. The bleeding of the hemophiliac need no longer be fatal and can often be controlled to such an extent that the disease is only a nuisance. The young diabetic does not have to look forward to invalidism, sterility and early death. Here, as in many other diseases, a hereditary factor is basic but the manifestations of the factor can be largely suppressed; one can only speculate as to medicine's potential to interfere with the expression of genetic determinants.

It is only through population studies that these factors can be untangled. Just as various environmental factors must be dissected out by holding one constant and varying another, the genetic epidemiologist must seek those peculiar situations where environment or heredity is held constant while the other varies. This is the purpose of studies of monozygotic and dizygotic twins, of siblings raised under different environments, of migrant groups, and of relatives subjected to various medical regimens or diets.

Vital statistics records are invaluable tools for locating some of these groups. The Health Department of New York City has developed a permanent system for recording twin births to facilitate such studies. The science of obtaining follow-up data on population groups is rapidly developing and is becoming a familiar role for research workers in Public Health.

A vast number of problems in genetics are dependent on an assumption that the population is in genetic equilibrium, that is, that the proportion of affected and not affected people remains the same from generation to generation and follows certain simple arithmetic laws. The frequencies involved must be determined from data representative of total population groups, using techniques traditionally concerned with epidemiologic data and with Public Health.

Investigations of gene linkages in *drosophila* have provided elaborate chromosome maps indicating what unit characters are on each chromosome, what their linear inter-relationships are and how far apart they are. Such information is almost entirely unavailable in human genetics. However, the number of blood groups now recognizable in humans is large and steadily growing. A first step in creating chromosome maps is to find multiple hereditary factors that are located on the same chromosome. The presence or absence of such linkage is becoming available for many of the blood groups. Since there are only 23 chromosome pairs in man, it may be hoped that a blood group marker will be

found on each chromosome. If this hope is fulfilled, it will then be possible to require that a suspected hereditary factor be proven to be linked to the marker on one chromosome. Studies of this sort require extensive series of cases. Again Public Health Schools are in an ideal position to coordinate the data of various hospitals or other case finding agencies and to develop practical mathematical systems for analyzing material of this sort. We are currently working with the Blood Grouping Laboratory of the Children's Medical Center on one of these studies.

Other problems of current interest are time trends in height and in I.Q., genetic effects of ionizing radiations, and long-term effects on the population of medical and social systems that protect the physically and mentally incompetent and allow them to reproduce.

There exists at present a marked shortage of people trained in the techniques of human heredity. Several schools of Public Health and schools of Medicine are developing programs of training and of research in this field. There is also a shortage of analytic tools for making maximally efficient use of population data. Human population studies must take advantage of natural breeding experiments. Inbreeding, for example, must be investigated primarily in populations with a high proportion of first-cousin marriages. Mathematical models for handling this and other problems are becoming available, but much more needs to be done.

It is expected that the 1981 report will indicate a vast expansion in teaching programs in genetics, an extensive new armamentarium of analytic methods, solutions to many of the problems alluded to here, and some practical applications, as yet unforeseen.

### *The Challenges of International Health*

by CARL E. TAYLOR, M.D., DR. P.H.

*Assoc. Professor of Preventive Medicine and Public Health*

INTERNATIONAL health workers have a unique opportunity to move as peacemakers among the peoples of the world. In a positive and nonemotional way they can contribute to checking the drift toward conflict which many people now consider to be inevitable. The role of the health disciplines in promoting world peace today is best exemplified in the active cooperation between nations who are members of W.H.O. The demand for better health represents a universally felt need. The origin of such cooperation for health goals goes back a century to the series of international conferences for controlling the major pandemic diseases. Before international cooperation in other areas was considered possible, the fear of cholera, plague and typhus and the need for regulating erratic local quarantine laws drove the actively trading nations together to hold in 1851 the First International Congress on Quarantine. Fear of the colossal devastation of total war maintains an uneasy peace today. Just as we have now moved beyond the artificial barriers of quarantine to more fundamental efforts to control epidemic diseases at their point of origin, we have in health programs opportunities to get behind today's uneasy balance based on the threat of nuclear retaliation to get at some of the basic causes of fear, envy and conflict between nations. The evolution of systematized political and legal international organization may grow out of the mutual understanding and respect of people who work together on mutual problems.

One cause of international tension is accentuation of the distinction between the have and have-not countries produced by the great numerical growth of population in countries which can least favorably accommodate the extra people. Demographically, it is evident that because of the youthful structure of the population pyramid of the developing countries, the world as a whole is already committed to a phenomenal growth curve. Even if effective family planning immediately lowered birth rates by factors much beyond what is today possible, the world population would still probably double within the next two generations. With existing political tensions it is not realistic to talk about how the United States can feed everybody. Helping nations to themselves achieve healthy living constitutes the highest degree of challenge to service for people who are professionally competent and personally dedicated.

The scientific challenges of international health work are particularly appealing to the adventurous. Not only are there prospects of travel to exotic places and opportunities to learn to know different people, but more importantly there are a wealth of research projects awaiting the trained observer. Two major types of research contributions can be made in an international setting. Several of the world's most serious and widespread diseases have geographical distributions which do not now include the United States or Europe. To be effectively studied *in situ* requires cooperative projects with local scientists. A second type of research in which international cooperation is developing is the study of diseases of general distribution under the varying environmental and social conditions of different areas. The attempts to utilize local differences as so-called natural experiments seldom produce conclusive evidence because of the difficulty in isolating specific variables. But out of careful observations, it is possible to gather epidemiological field data which can be fitted into patterns which make sense.

As one walks through the villages of the world, the overwhelming impression of staggering need leads to two quite different types of response. The average tourist-type visitor is repelled and many sincere people who start international work with enthusiasm eventually develop what Norman Cousins has called "compassion fatigue" or "conscience sickness." By contrast, those persons who make a constructive contribution are able to go through the usual period of cultural shock and yet develop a new emotional balance which maintains objectivity without losing sensitivity. A professional who has a specific contribution to make has in his work the best antidote to the protective shell of hardboiled callousness that was so common in the worst type of colonialism. It is too much of a strain on the psyche to think about the total volume of unmet need, the fifty needy who stand behind each person helped. To do the tasks of the day and have faith that these limited contributions will fit in with the worldwide efforts of others who are working for the general good provides our only prospect of reaching Osler's goal of Equanimity. I particularly commend to those who go into the far places of the world the quotation from Marcus Aurelius:

"Thou must be like a promontory of the sea, against which, though waves beat continually, yet it both itself stands, and about it are those swelling waves stilled and quieted."

*The New Breed of Administrator and His Challenge  
to the Schools of Public Health*

by ROBERT H. HAMLIN, M.D., M.P.H.

*Associate Professor of Public Health Administration*

GREAT changes are taking place in the field of public health. Communicable diseases remain important but no longer are they the primary focus of public health workers. Areas of interest such as environmental health, mental health, and medical care are receiving greater emphasis and application of resources. Additional spheres of interest will undoubtedly appear and receive concentrated attention.

All these rapid, significant changes reflect the great dynamism in public health. They have, however, created great uncertainty as to the future role of public health and its personnel. Other academic institutions and professional groups demand and are acquiring the right to share in new developments.

Because the field of public health is changing, so are the schools of public health. For these reasons, it is difficult to say at this time what the pattern of academic training may be in schools of public health in another decade. Needless to say, the schools must train a newer — and wider — diversity of personnel, particularly in the field of administration.

Traditionally, academic instruction in the administration and organization of health services has developed in two directions: 1) public health administration in schools of public health, primarily preventive in nature and directed to the training of health department personnel, and 2) hospital administration in schools of business administration, primarily directed to institutional business management. Only recently in the United States have we begun to consider the training of personnel in the administration of health services regardless of the agency or locus in which they may practice.

It is imperative in the field of organization and administration of health services that we change from a principal emphasis on training of personnel for health departments to the training of individuals to perform in certain capacities in a wide variety of medical care organizations.

It seems quite probable that the traditional health department in the United States will follow the same course of proportionately decreasing influence as we have seen in Europe where patterns of health administration often precede those in the United States. Although considerable discussion is heard of enlarging the role of health departments in personal health services, the greatest developments in this field will take place outside their immediate administrative control.

If one looks to the future in the field of administration of organized personal health services, the greatest growth and changes will occur in the administration of hospitals, the content of mental health programs, the services provided in rehabilitation programs, and the importance of public medical care programs in welfare departments. Within a short time the Social Security System will be used to finance medical services for certain population groups. These programs in turn will probably be administered by the individual States under Federal regulation. With rare exceptions, it will be the welfare departments and not the health departments who will be responsible for this social insurance program.

An old but continually true axiom is that administrative control follows financial control. As the great growth in government financing of medical care occurs through welfare departments, theirs will be the greatest influence in the development of medical care services in which government participates.

This is not meant to say that health departments will not have an important role. They will continue to develop certain specialized programs which will be of their greatest value in promoting the quality of medical services. In terms of the number of individuals covered and the amount of money expended, welfare departments will be the predominant force in public medical care.

As much logic as there may be for administrative consolidation of state departments of health and mental health, the trend will continue for the expansion of individual, separate departments of mental health. The same is true of rehabilitation programs at the state level, now usually located administratively in state departments of education because of the requirements in Federal legislation. Although progress may be slow, the hospital will continue to grow as a central element of community services. Thus the pattern of fragmentation of administration of health services will increase rather than decrease in the United States.

This trend toward fragmentation is encouraged by the simple fact that separate disciplines with individual training programs are developing for hospitals, mental hospitals, rehabilitation centers, and welfare department programs. It is the clinical physician who predominates in the hospital environment. In mental hospitals the psychiatrists remain supreme with increasing emphasis (and quite justifiably so) on the psychologist and his associates. In rehabilitation programs a new disciplinary group is gradually evolving who consider their specialty to be separate from any of the foregoing. The departments of welfare are under the principal influence of social workers who have developed a considerably different disciplinary philosophy.

All of this means that the orientation of training in administration in schools of public health can no longer be directed toward any single type of agency or discipline. Schools of public health, although slowly recognizing this change in the type of administrative personnel which will be demanded, have considerable distance to go in preparing themselves for the task. A number of personnel with a wide variety of professional backgrounds will profit immensely by an exposure to the philosophy, approach, and methodology of public health.

The schools of public health must look a decade *ahead* to formulate their current educational programs, for the student of today is the leader of tomorrow. What students are given today in their public health academic training will be most profoundly applied not today or tomorrow or next year, but in ten years or so when they will be at the zenith of their careers and influence.

To look into the future is, any time, a trying task. In times of profound changes such as public health is now experiencing, it becomes even more difficult. But the effort is mandatory, particularly in the field of the administration of health services where we are training the researcher, teacher, and policy maker of the future for a new and greater variety of administrative environments.

## *Accident Research at the Harvard School of Public Health*

by ROSS A. MCFARLAND, PH.D.

*Professor of Environmental Health and Safety*

ONE of the most important challenges in public health today is the urgent need to develop more effective approaches for the prevention of accidental injuries and deaths. Great progress has been made in curative and preventive medicine in the control of many health problems and diseases. However, accidents have now come to constitute the major threat to the well-being of large segments of our population. With the increasing mechanization of our civilization in transportation, at work, and at home, the effects of accidents now exceed those of disease entities, and are presently the leading cause of death up to about age 36. This concentration of accidents among the younger age group represents an enormous cost to the productive resources of the country. Most of the fatalities occur on the highway, but the greatest number of injuries are in the home.

It is apparent that in any positive health program, it is equally as important to prevent death and crippling from accidents as it is to prevent disease and epidemics. If the end results, rather than the mechanisms, are the chief concern, what difference does it make whether persons are killed or crippled from disease or by injury? Existing concepts of public health and preventive medicine thus are now being extended to include the prevention of accidents at home, in industry, and in various forms of transportation.

It seems only logical that public health should assume responsibility for the control of this threat as it has done earlier in relation to quarantinable and other diseases. This is appropriate since the causes of injuries tend to follow some of the same physical and biological laws as disease processes, and many of the same techniques used to analyze and control other health hazards can be applied to the understanding and prevention of injuries. The role of human factors is of greatest interest to the health worker, but the design of all kinds of equipment, and the influence of many environmental factors are also of importance. Furthermore, because of the multiple influences in accident causation, an interdisciplinary approach, such as is well known in public health, is a basic requirement. Physicians, physiologists, engineers, and specialists in various of the biological sciences can effectively collaborate in this field.

Attempts should be made first to set forth the basic physical, physiological, and psychological characteristics of those who are injured. When such facts are associated with the specific objects or mechanisms, and the environmental conditions at the particular times and places of the accidents, relationships can be revealed leading to an understanding of the causes and to the design of preventive measures. Factual information of this type can be discovered only through careful epidemiological surveys, statistical analyses, and controlled experiments. A dynamic and continuous safety program can produce positive results only by the constant application of the fundamental principles resulting from such studies.

Such methods can be easily applied to the fields of industrial and transport safety, and in many cases to accidents in the home as well. A significant reduction in industrial accidents can result only from the proper control of the worker, his equipment and environment. Adequate methods for selection, training, and supervision will also bring some improvement. Near accidents, critical incidents and emergencies all provide valu-

able clues for the prevention of real accidents. In addition, the new and rapidly developing field of biotechnology also offers a promising approach to operational efficiency and accident prevention in all situations where persons use equipment. The main objective is to encourage the design of machines and equipment in terms of human capabilities and limitations. Advance analysis of the design of equipment can meet human requirements in such a way as to reduce the likelihood of accidents. The working environment, if subjected to a high degree of control, may result in increased efficiency and safety for the worker. Finally, interest, attitudes, and morale in relation to the job are important and must be carefully considered.

Many of the above principles also apply to the reduction of accidents in various forms of transportation, for outside the home, the largest proportion of accidents occur in some form of highway transport vehicle. Private and scheduled air transports, and railways, also have high accident rates. The number of operating and maintenance personnel in the various transport categories is very large, but little has been done to apply modern concepts of preventive medicine and public health to the truck and bus industries. This is urgently needed at the present time, but trained specialists are not available to enter these fields.

A most important need is the continuation and expansion of research. At Harvard, a broad program of research on human factors and biotechnology has been concerned with transportation and industrial accidents, and with the development of principles applicable to all types of accidents. However, many problems remain to be solved, for example, in aviation with the introduction of jet aircraft, high speed-high altitude flying, helicopters, and nuclear powered equipment. The interest of automotive engineers in designing safer vehicles has opened up many significant areas for investigation. Problems in the field of aging and medical problems among pilots and drivers require investigation for more precisely defining limiting conditions. Special housing for the aged raises new problems of architectural design and household equipment. Health hazards concerning noise and various new toxic substances in industry and in the environment are little understood in relation to their influence on accidents.

In conclusion there comes to mind a paraphrase of the definition of public health offered by Professor C.-E. A. Winslow, as follows: "Public health is the science and art of . . . promoting physical . . . health and efficiency through organized community efforts for the sanitation of the environment, the control of community *hazards whether they are infectious diseases or unsafe practices in the design and operation of equipment*, the education of the individual in principles of personal hygiene, *human limitations and safety*, the organization of . . . services *both for the early diagnosis and preventive treatment of disease and for the identification and elimination of accident causes, human and mechanical, at home, in transit, and at work or play*, and the development of social machinery which will ensure to every . . . individual a standard of living adequate for the maintenance of health and efficiency."

## *Theoretical Biology and Public Health*

by ANTHONY B. BARTHOLOMAY, S.D.HYG.

*Assistant Professor of Mathematical Biology*

EXPERIMENTATION, observation, and theory are all necessary aspects of the practice of any natural science. Depending on the state of development of a given branch of science, on the nature of a particular investigation, and on the special training and proclivities of the individual investigator, one or another of these methodological components necessarily will be chosen as the approach pursued by that individual. Nevertheless, it is the obligation of the natural scientist to strive for that degree of completeness in his work which is attained only by an active effort to relate as closely as possible each of these aspects to the other in the final interpretation of his results. The whole picture must be kept in mind.

The problems of biology present such high orders of complexity that observation and experiment have failed to generate anything like the general theories and principles of physics and chemistry. As a result, theoretical thinking in biology often has had to proceed along *speculative*, as opposed to *predictive* lines, except in those areas where crucial experiments could be undertaken. In retrospect, one can see that a large share of this constraint has arisen from the limitations of existing measuring and observational devices and techniques.

But now a great acceleration toward more precise quantitation and deeper theoretical insight is underway. Biology is, in fact, now at the sharpest turning point in its history. The blending of biology with chemistry and physics — witness the appearance of the newest fields of biophysics and molecular biology — in part induced by the fantastic developments of modern technology such as the electron microscope and the X-ray diffractometer, have changed the basic biological unit of information from cell to molecule and atom. Formerly ignored particles within the cell can now be thought of as chemical factories with structure and function equated to the demands of the life processes of protein synthesis and the transmission of genetic information. At this molecular and submolecular substratum of the architecture of nature, physics, chemistry and biology cannot be distinguished from each other. One should, therefore, be prepared to see each from the point of view of the other.

Within this context it is important for a theoretical biology to grow so that it may lead us even closer to those indirectly perceptible fundamental truths which underlie all observations and are responsible for those effects which may be obtained experimentally. These basic principles which can be captured only in theory are invariants of whatever process and technology man's ingenuity may devise as a means of approaching them more closely. In this sense, one may see the necessity for viewing the discovery of biological knowledge as the result of an interplay between observation, experimentation and theory with mathematics providing the means of representation and the formalism for accomplishing this.

(*Ed. comment:* In the long-range view of public health it seems important that these concepts of "programmed biology" be developed and applied, using man, animals, micro-organisms and plants as the units instead of molecules and atoms. Through epidemiology a beginning has been made, although no further than the descriptive phase; purposeful manipulation and experimentation await further development. Biostatistics has provided

the basis for a mathematical representation; yet to be developed are programming methods for new theories of health and disease which need to be formulated and tested. It appears imperative that Public Health start training people now in this theoretical approach to human ecology if it is to produce its own theoreticians (comparable to Einstein or Medawar) and emerge as more than a combination of applied sciences. G. S.)

### *Genetics in Public Health*

by ROBERT B. CHANG, M.D., S.D.HYG.

*Assistant Professor of Microbiology*

WHETHER we realize it or not, we as public health workers are constantly confronted with genetic phenomena in our professional activities. For example, an attenuated live vaccine is nothing but a mutant which has lost most of its disease-producing capacity but still retains its immunizing property. The tuberculosis specialists are well aware of the high frequency of naturally occurring mutants which are resistant to isoniazid or streptomycin. The influenza pandemic occurring several years ago has been shown to be caused by the appearance of a presumably mutant strain of influenza virus. Through inbreeding and selection, strains of laboratory animals with high and low frequencies of spontaneously occurring leukemia are readily obtained. Even specialists in cancer, mental health, and chronic diseases are impressed by the role played by genetic constitution. Thus, it has been reported that in Hawaii cancer of the prostate is prevalent among the Caucasian while nasopharyngeal cancer is prevalent among the Chinese. It is difficult indeed to find public health activities which do not involve genetics. We may even define public health, in genetic terms, as the intelligent manipulation of the environment so as to encourage the best possible expression of individual genotype thereby producing the best possible phenotype.

The past two decades have witnessed some of the most explosive situations ever to confront mankind; the feverish rise of nationalism, the fierce competition of two diametrically opposed ideologies, the building up of population pressure and many others. Perhaps the most significant of all is the situation created through our explosive advance in scientific knowledge. Mankind has, for the first time in history, sufficient capability to extinguish or to vastly "better" itself depending on how the new-found knowledge is put to use. Figuring prominently among the rapidly advancing frontiers of knowledge is the science of microbial genetics. The microbial geneticists are now capable of synthesizing genetic materials, chemically known as deoxyribonucleic acids (DNA), in the test tube. They extract an enzyme called polymerase from *B.Coli*, mix it with some simple chemicals called nucleotide tri-phosphate and as soon as a few molecules of DNA from one of many origins are introduced to act as templates, synthesis of more DNA molecules proceeds rapidly. Chemically pure DNA extracted from many bacteria have been shown to be capable of penetrating other bacteria thereby endowing the recipient and its progenies with new capabilities. Very recently, it has been shown that bacterial DNA may penetrate into human cells although there is no evidence as yet that such bacterial DNA expresses itself through the human cell. Other laboratory workers are producing mutant viruses at a fantastic rate 500,000 times the natural rate, so that 50% mutants are produced. They remove chemically the protective coat of

viral genes, treat these "naked genes" (nucleic acids) with nitrous acid and reintroduce such chemically altered genes into susceptible cells. Still others are utilizing viruses as carriers of genetic materials between cells. These are just a few examples of some of the most fascinating advances in microbial genetics. Practical implications of these findings are as yet unknown, although the potentialities are beyond our imagination.

In sharp contrast, the science of human genetics is distressingly primitive. Our preoccupation is still with the Mendelian law of inheritance; something that was described almost a hundred years ago. We are still concerned chiefly with dominant and recessive genes as though phenotypic traits were controlled as simply as all that. Our chief source of information is obtained through the construction of pedigrees. This is not to downgrade the importance of such work; a certain amount of such painstaking work has to be done. We should realize, however, that progress derived through such an approach is going to be very slow (and understandably so). Perhaps, it should be pointed out also that too much emphasis has been placed on the defective genes. Little or no effort has been made in studying the more desirable traits of man. To understand the genetic potentialities of man is essential to the intelligent manipulation of the environment so as to encourage man's optimal development.

Newer approaches to the study of human genetics, based on the technics and principles developed in microbial genetics, are being devised. By growing tiny bits of human tissue in test tubes, we can now study our own cells under fairly well defined experimental conditions. This approach permits us to study morphologically our genetic apparatus as well as metabolic and immunological patterns. Some progress is now being made. For instance, the chromosome pattern of the human cell is now put on a firmer basis; we have only 46 chromosomes instead of 48 as we thought we had. The mongoloids, a relatively common congenital disease affecting 1 out of approximately 600 births, have been shown to contain one extra chromosome in their somatic cells. The chromosome patterns of other heritable diseases are now being carefully scrutinized. Through the use of a selecting nutrient medium, we now know that at least one in a thousand rapidly growing human cells is capable of multiplying without glucose; and, one in ten million without inositol, indicating naturally occurring mutants. The effect of ionizing radiation and other chemical mutagens on man are now being studied at the cellular level. Of some interest is a recent report showing an increase in sensitivity to X-ray of certain human cells which have incorporated certain unnatural bases into their nucleic acids. By applying the principle of genetic regulation of enzymatic activities, we now know that some forms of mental retardation are due to inborn errors of metabolism. For example, the heritable disease known as galactosemia has been shown to be due to the lack of an enzyme which converts galactose to glucose. Mental retardation and liver damage seen in the galactosemics are the results of an abnormally high tissue level of galactose. By carefully avoiding galactose in the diet, permanent damage can be minimized. Perhaps we may even speculate that susceptibility to mental illness, cancer, or cardio-vascular diseases may be genetically determined; that some day we may be able to identify such heritable traits through recognition of chromosome or enzyme abnormality, and that the elimination of certain stresses (such as modifying diet and other environmental factors) may prevent the appearance of such diseases.

## Our Responsibility

by JOHN C. SNYDER, *Dean, Harvard School of Public Health*

THE rate of change in the structure and the activities of society is quickening. New kinds of health problems are emerging far more rapidly than they can be solved. The school of public health has a responsibility to participate in the search for the new knowledge which is essential for intelligent action in the public interest, and to educate graduate students who will make policy decisions with wisdom. It is certain that the profession of public health will be extensively involved in future years in meeting the problems of society. There is a shortage of physicians in the world, far more acute in some regions than in others. There are not enough teachers to staff the new medical schools which must soon be built, in the newly independent nations, and in the U.S.A. as well. Even with great effort, and large expenditures of money, it is most unlikely that the people of the world can attain, or even find, the economic resources to pay for the kind of physician-patient-hospital relationships which we now have here in Boston. This is the stark reality of the situation — the population of the world is growing much faster than are the institutions which prepare physicians to diagnose and treat the ills of the individual patient. Is the Harvard School of Public Health fully alert to its opportunities and responsibilities? Yes, but we could be doing things more thoroughly.

It would be simple for me to list several major subjects which the Harvard School of Public Health should be attacking, but which must wait until we have the funds to appoint the professors to lead the studies, conduct the research, inspire and teach our students. Let me cite examples:

*International Health.* The magnitude of the health problems arising from rapid population growth is beginning to be widely realized. Less widely appreciated is the lack of knowledge and experience in the design of curricula in medicine and public health for the new nations in the perspective of their economic resources, religions and social customs. Recently I visited a nation of 6 million people where I saw a group of students who will be the first ever to get a college degree from their own university. I learned that fewer than fifty of its own citizens are physicians. Its economic resources are being developed rapidly and now this nation needs an intelligent plan for the establishment of effective health services and medical education. It is important to understand clearly that the attempt to imitate the existing systems in the United States usually is *not* an adequate solution for the new nations.

Recently our School was asked to design and develop a system of medical education and to establish a health organization for Ethiopia; similar requests have come from Taiwan, and from a large section of Iran. Obviously our School should not move en masse to a foreign area, but we should have a professor who is an expert in international health who can lead, advise, and plan the experiments which will provide the basis of logical action for such areas.

*Economics of Public Health and Medical Care.* We might take as another example the very subject Dr. Lee urged upon his colleagues in 1922, the economics of public health and medical care. Brief reflection is enough to convince us of the increasing complexity which is arising in the relations between private and government health agencies not only in the United States but in many other countries as well. We can agree that there must be an ingenious attack on these problems.

THESE ESSAYS have sampled current dilemmas of the world, all of importance to the affected group but some vital to everyone. Emerging as problems transcending any border or racial group are environmental contamination, from nuclear bombs and other sources, population growth which outstrips the availability of adequate means of sustenance and inequities in distribution of medical care.

Each of these broad problems involves the need for control: control of all nuclear materials and human and industrial pollutants, control of population growth and control of the distribution of medical facilities. But control requires an interaction of controlling force and the population and environment, each influencing the other. An ecumenical approach to control must be our basic demand. Minor differences must be accepted and general principles of agreement and enforcement defined. Too often the stark truth, the hard basic skeleton of an issue is hidden within amorphous phraseology like the skeleton of a whale hidden within a mass of blubber. Only by seeking and accepting broad theses for action can even a basis for ecumenical control be established. How can these best be sought? Can groups work alone to initiate action? This not only appears possible but highly desirable, for only after an issue has been introduced to the world community can any cooperative attack be made. Thus even the group with a problem which may initially appear unique may find a solution through sharing with groups with related problems.

India and Japan have been working for the past decade on various aspects of population control. Their basic ideas for control merit further study — and cooperative study — by all nations of the world, that the nature, breadth and depth of the “population problem” may be defined, factors operating in its production analyzed and various approaches to control assayed. Here the ecumenical approach may have its onset in individual action but culminate in understanding and knowledge which permits control by ways acceptable morally, socially and scientifically.

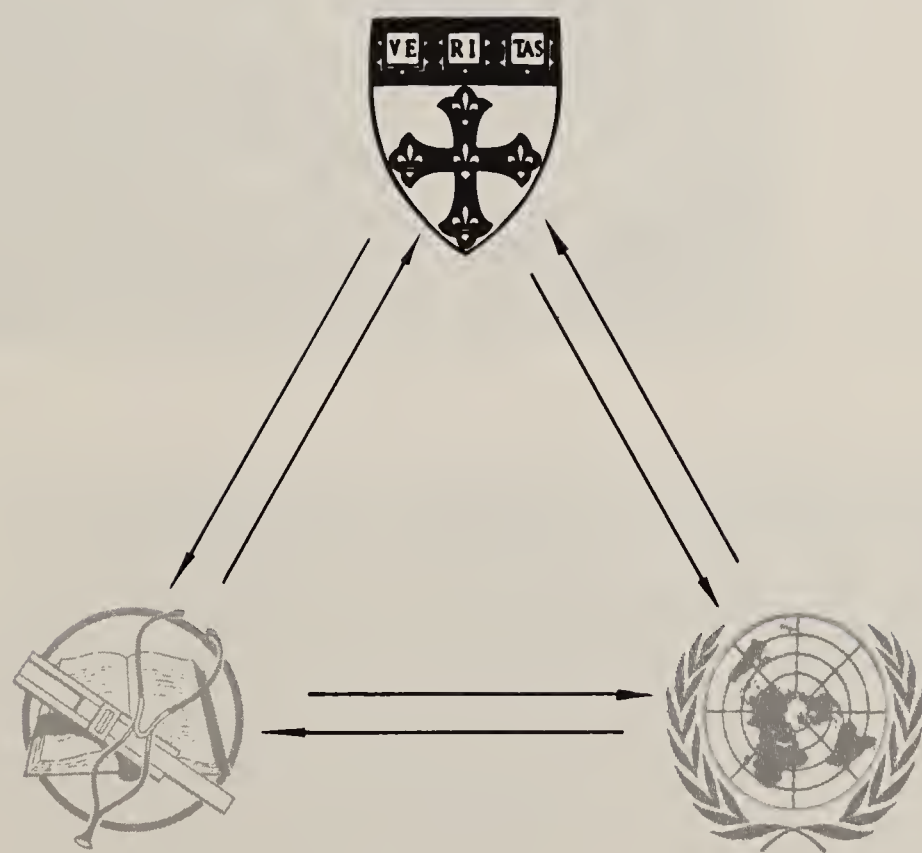
Difficulty in effective disposal of wastes is intimately linked with population expansion and industrial development, and presents parallel problems. Bomb testing and stockpiling of nuclear armaments, together with increasing peaceful uses of atomic energy pinpoint the special case of radioactive contamination. The staggering prospect of a weapons stockpile sufficient to liquidate man wrenches our attention away from petty politics and can, hopefully, bring nations together in agreement, perhaps out of anxiety but nonetheless for the common good — and survival.

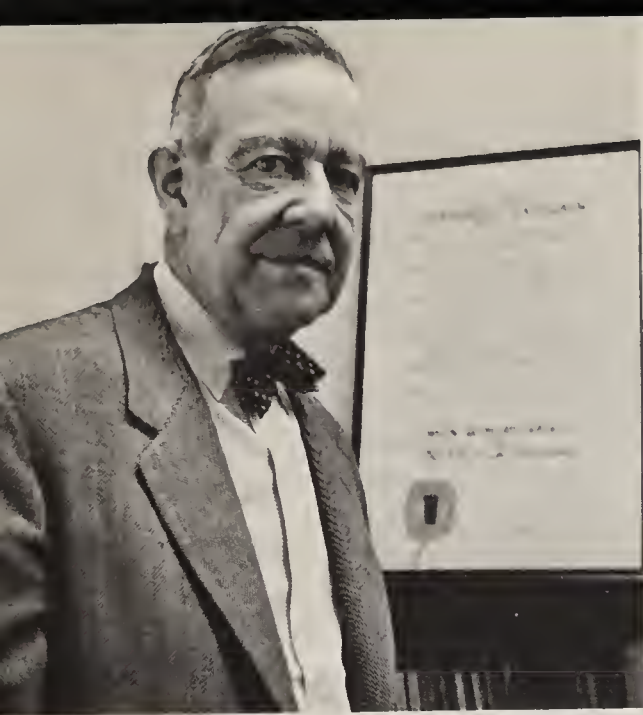
Equalizing the distribution of medical knowledge and supplies has had some exemplary beginnings — and some less remarkable. Project HOPE's use of a hospital ship as a focal point for medical care is presently demonstrating both the need and one answer to the need. Further delineation of the parameters of both problems and attack, by groups involved and through ecumenical study, should lead to further solutions. The WHO has served well in some areas — carefully planned extension of this organization may provide one important answer.

Equalizing the availability of medical care within a culture presents further problems. Great Britain's “socialized medicine” is one solution to inequity of medical care, especially that due to economic factors. Already apparent, and voiced with concern by some physicians, is a loss of freedom, regulation of income and time-consuming administrative detail. Yet this is implicit in control: the individual or society submitting to a control forfeits some freedom relating to the area controlled.

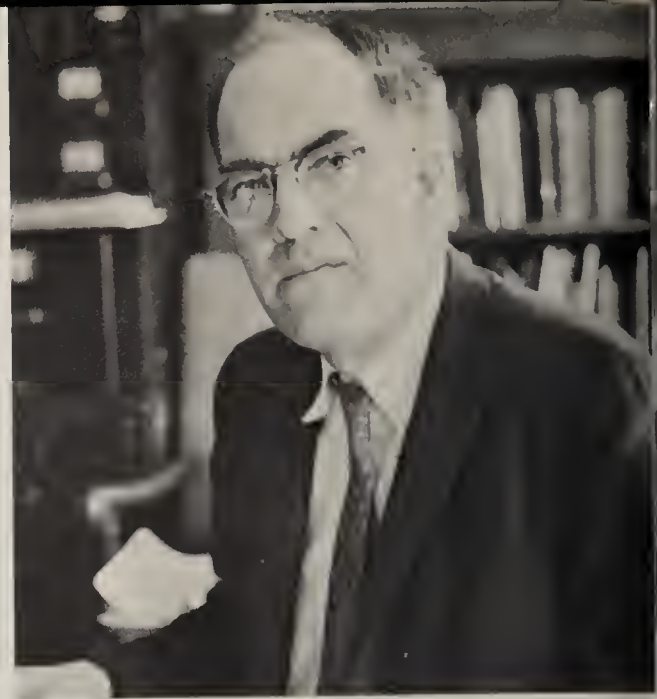
The challenge lies first in defining those areas of man's life where controls are needed, preserving maximum individual freedom yet allowing equal opportunity and protection to all, second in developing controls both effective in action and acceptable in application and finally in equitably and consistently applying these controls. By these means man may survive, organized into a world community which preserves cultural heritages but is devoted to the health and welfare of all. Without control man will perish through disease and self-destruction.

L. D. Samuels, M.D.





DR. HUGH LEAVELL  
ASSISTANT DEAN



DR. JAMES WHITTENBERGER  
ASSISTANT DEAN



DR. JOHN C. SNYDER, DEAN

### *Administration*

PUBLIC health evolved from the early combination of medical science and engineering for the control of environmental hazards. Public health has now grown to embrace various facets of the biological, physical and social sciences as the community aspects of health problems have become more complex. In its plans for the future, the Harvard School of Public Health is principally concerned with two general kinds of problems. In the first category are the problems which have emerged as certain areas of the world have become highly urbanized and technologically advanced. Foremost among these problems are mental illness, cancer and the degenerative diseases, accidents, and the hazards of ionizing radiations. Discovery of causes and factors which modify the course



MRS. MARGARET BARNABY  
ADM. ASST. TO THE DEAN



MR. ROGER SPAULDING, ASST. TO THE DEAN



MISS BEVERLY LASKEY, REGISTRAR

of illness and injury is necessary for the development of prevention and control. Research is also needed to achieve effective administrative technics for the provision of optimum health services for entire communities.

The other general category of problems in public health derives from the fact that more than half of the people in the world reside in areas seriously afflicted by malnutrition and communicable diseases. The programs which have been successful in the technologically advanced countries often cannot be used because of basic differences in culture, geography or economic factors.

In its approach to these problems the Harvard School of Public Health has as its objective the advancement of public health, both nationally and internationally. The School seeks to accomplish its objective through its activities in education and by its search for knowledge. The Faculty is equally committed to basic research in new fields and to the development of effective methods for the application of knowledge by communities or nations. The Faculty of the School and its alumni have the opportunity to play a role of major importance in the decades ahead as the profession of public health evolves in scope and content to meet the health problems of our rapidly changing societies.

*First row (l. to r.):*

MISS MARY O'NEILL  
MRS. MARGARET BARNABY  
MISS BEVERLY LASKEY  
MRS. IRENE FORBES

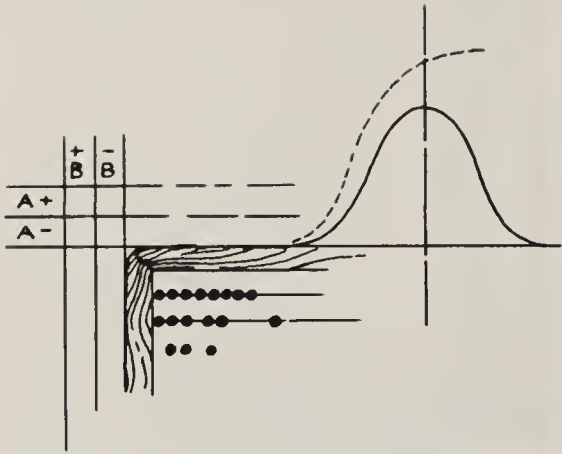
*Second row (l. to r.):*

MISS NUVART BOGHOSIAN  
MRS. SALLY MC CLEOD  
MR. KEVIN MOLONEY  
MISS AGNES MURPHY  
MISS JANET MC CARTHY  
MISS JUDITH GILMORE

*Portrait in background:*

DR. ROGER I. LEE





(l. to r.):

DR. ROBERT REED  
 DR. HUGO MUENCH, DEPT. HEAD  
 MISS MARGARET DROLETTE  
 DR. JANE WORCESTER



## *Biostatistics*

A CHALLENGE that confronts everybody is the need of making decisions. All of us are faced with problem situations every day. If we are unable to come to workable conclusions, we arrive at a sort of catatonic state in which all activity is suspended.

The decisions we have to make are mostly minor: do we eat steak or hamburger tonight; do I get out the car or ride the subway; what looks like a good thing in the fifth at Hialeah? We arrive at them in various ways: one of the alternatives costs more than we can afford — or we don't think the weather man knows his business — or we like the horse's name because it reminds us of home. As long as the results of mistakes are nonfatal, we usually manage to survive and remain solvent whether our decisions are based on hunch, "common sense" or the euphoria engendered by some advertising man's appeals to the emotions.

Comes a time when this is not good enough. Sooner or later, we must make decisions on questions whose answers matter a great deal. Then we need rather more than hunch or emotional appeal on which to base a decision: we must be able to marshal evidence properly in the light of a precise question, and to know whether an answer is applicable, and to what extent. To anybody in areas which involve human life and welfare, it is clearly of extreme importance to get the right answers to the proper questions, and to make appropriate decisions.

These questions may involve the choice of a preferred treatment, or the effectiveness of a vaccine, or the benefits expected from an extensive project in public health administration. None of the answers may properly be based



DR. BARTHOLOMAY AND A BINOCULAR VIEW  
OF SEQUENTIAL ANALYSIS



DR. MUENCH AT HIS LAST MEETING OF COURSE, I, AB

on folklore, or on conformity to herd mores, not even on an informed guess, if a better basis is available.

It is the function of the Department to foster the development of critical attitudes toward evidence and pseudo-evidence, to provide tools for the examination of premises and the testing of conclusions. In the face of our prevailing culture of conformity to human environment at the least possible expense in friction, of the implicit aim of much of our education to produce the "well-rounded" individual who can roll with any change of the wind, it is a real challenge to develop the capacity of individual judgment and the power to arrive at one's own opinion based on the best available evidence.

Statistics is, or properly should be, a tool for using information to guide action. In order to avoid pitfalls, the user of statistics must be able to ask several intelligent questions, such as: "What do the figures mean? How were they obtained? What do they measure? How do they relate to my problem?" He must then be able to evaluate the answers and decide how much confidence he can place in them.

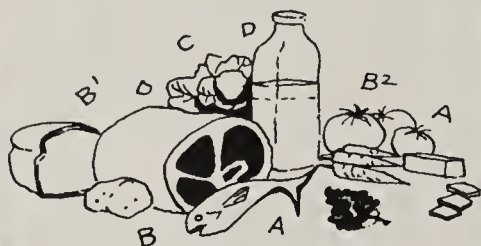
The Department feels that its major challenge is to make sure that nobody leaves this School without some of the rudiments of an ability to reason on a quantitative basis. In doing this, it can make at least a small contribution to the creation of a "well-rounded man" with a few flat spots on which he can rest while he arrives at his own decisions, based on something more than the prevailing climate of opinion.



A DEPARTMENTAL MEETING



DR. FREDRICK J. STARE, DEPT. HEAD



DR. ROBERT P. GEYER  
DR. JEAN MAYER  
DR. DAVID HEGSTED

## Nutrition

THE Department of Nutrition was started 19 years ago on a challenge — the challenge to start for the first time in any great health and medical center a separate and independent Department of Nutrition.

Nutrition was nursed along for the first few years with encouragement and advice, particularly by biochemistry in the Medical School and physiology in the School of Public Health.

Once the challenge to start and survive had been met, many other challenges became apparent: growth with quality, growth with balance between basic contributions to nutrition as a science and contribution in applied nutrition, balance between public health and medical applications, balance between domestic and international applications, and balance between teaching and research.

You ask — What challenges do you see and what are you doing to meet them? We answer —

1. We see the challenge to find the funds to complete the Nutrition Building, not only to house nutrition adequately, but to help house other parts of public health. Then we shall have another first — the first separate building to be known as the Nutrition Building at any health and medical center.

2. We see the challenge to develop in Latin-America the outstanding Department of Nutrition in a health and medical center. This we are doing cooperatively with the School of Medicine of the University of the Valle in Cali, Colombia. This will be done not as a separate Institute of Nutrition, but simply as a Department of Nutrition in the School of Medicine — a department closely allied and cooperating with other departments of the medical school and university.

3. We see the challenge to do our part in providing professional assistance to the international surveys periodically conducted by the Interdepartmental Committee on Nutrition for National Defense of our government. Dr. Vitale went to Vietnam and Colombia, Dr. Gershoff to Formosa and Thailand, and Dr. Hegsted to Lebanon.

4. We see the challenge of nutritional problems in Africa — in Nigeria, where we have worked — in Liberia, Uganda, the Congo, South Africa, Ghana, and many other countries a number of us have visited and where we have friends and colleagues. We will have within this year the beginning of a research and teaching program in cooperation with the Children's Hospital of Boston and the Medical Research Council of Ghana, made possible by our Ghanaian student of last year, Dr. Fred Sai.



DR. MARTHA TRULSON, MISS MARY MCCANN  
DR. OSCAR PORTMAN



DR. STEPHEN ANDRUS, DR. JOLANE SOLOMON  
DR. MAYER, DR. STANLEY GERSHOFF

5. We see the challenge to root out and expose continuously the evils of food faddism and the anti-fluoridationists — those bigots who oppose by hook and crook, mostly the latter, the sound and well tested advance of modern nutrition.

6. We see the challenge to continue to train the top flight nutritionists in public health and medicine, both for this country and abroad, like Huene-mann at Berkeley, Santa Maria in Santiago, Olson in Pittsburgh, Suvarnakok in Bangkok, Van Italie in New York, Watkin in Mexico, White and Metcalf in Chicago, and a dozen others.

The major challenge to nutrition remains what it always has been — to determine the “best” diet for anyone or everyone and then to see that this diet is available and consumed. Definition of the “best” diet is impossible but certain things are clear. In underdeveloped areas of the world the basic needs are reasonably well defined in many areas. The problems are largely economic, agricultural, educational and political. We function in training, in definition of the problems, in finding methods of meeting them, and in service through other agencies and cooperative projects. In the United States and similar areas it is clear that the major problems are not concerned with too little food but the right kind of food. The major challenge is definition of the relationship between diet and nutrients and atherosclerosis, cardiovascular diseases, the formation of kidney and bladder stones, obesity, and numerous other “metabolic” diseases that plague mankind. Major efforts of the department are related to these diseases and involve animal experimentation, biochemical, physiologic and psychologic studies, clinical trials and epidemiologic investigation.

Challenges there are — exciting, stimulating and satisfying.

BEGINNING OF THE NEW NUTRITION BUILDING



THE SECRETARIES



MISS ELIZABETH RICE  
 DR. MARJORIE A. C. YOUNG  
 DR. ROBERT HAMLIN  
 DR. HUGH R. LEAVELL  
 DEPT. HEAD  
 DR. LEONID SNEGIREFF  
 GERALD E. CUBELLI



## *Public Health Practice*

"Public health practice is the application of medical, social and allied disciplines on the basis of scientific conclusions in an organized community activity designed primarily to protect and advance or restore the health of the people."

(World Health Organization-Scientific Group on Research in Public Health Practice, 1960)

The Department of Public Health Practice faces challenges in many directions. This is true for a number of reasons. The Department is a sort of holding company with sizable activities which in other schools might be organized in separate departments. Some examples are Mental Health, the Social Sciences in Health, Medical Care, Chronic Disease, etc. Each of these fields has its own special problems in basic and applied research, as well as in teaching and evaluation.

"Practice" involves translating knowledge into services. Practitioners must bridge the gap between research in the laboratory or in the field and the application of new knowledge in the community.

Learning "what the people want done about their health" and finding a fit between the people's desires, their "true" needs, and what is possible presents many challenges.



JOHN G. MC CORMICK  
 MRS. MARTHA BREED  
 MRS. FRANCES PITTS  
 DR. LEAVELL  
 DR. F. ROBERT FRECKLETON  
 DR. LEON TAUBENHAUS  
 MRS. ELIZABETH K. CASO

DR. EDWARD A. MASON  
 DR. GERALD CAPLAN  
 DR. LOUISA P. HOWE  
 DR. THOMAS F. A. PLAUT  
 MISS CHARLOTTE E. OWENS  
 (MENTAL HEALTH GROUP)



The natural history of many (if not most) diseases varies only in minor detail as a particular disease occurs in various parts of the world. But the types of organization man sets up to deal with his health problems vary greatly from one country to another. Through more intensive studies of administration on a comparative basis it should be possible to make generalizations which will broaden our understanding of health administration.

Public health practice deals with the dynamics of human behavior and with organization and administration. It must reach better understanding of its processes not only through research of types used in the behavioral sciences, but also through devising new research models applicable to answering the kinds of complex problems which are part of public health practice. Because much of this differs significantly from natural science research, the practitioner is challenged to try to interpret each of these two research fields to the other.

There are a number of challenges in administration at this time which deserve special attention. Among them are the following:

*Comprehensive health care* — how may it be made available to more people?

How it may be organized, administered and evaluated.

*Regionalization* of health services — how may it be extended?

*Local Health Units* — how may they be organized to cover metropolitan areas, and sparsely-populated rural areas? Are new concepts of what a local health unit should be in order?



PREVENTIVE MEDICINE SEMINAR GROUP

*Seated, l. to r.:*

DR. OZZIE G. SIMMONS

DR. BENJAMIN PAUL

DR. SOL LEVINE

DR. SIDNEY H. CROOG

*Standing:*

DR. WILLIAM A. GAMSON

DR. IRVIN T. SANDERS

(SOCIAL MEDICINE GROUP)



*Coordination* of health services — how may it be achieved when so many different administrative units are involved, both governmental and voluntary?

*Medical Care* — how may the hospital, private practitioners, and the conventional public health department be brought more closely together? Also how may the skyrocketing costs of medical care be controlled, and how financed in countries like the United States?

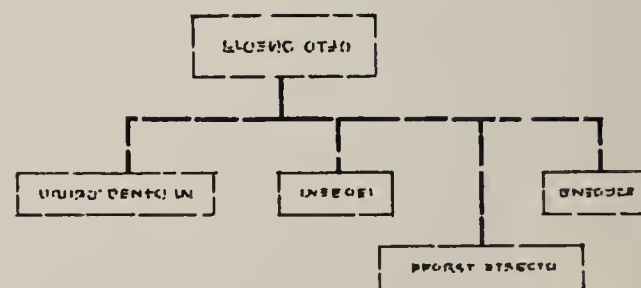
*Public Health Team* — how may the many different professions concerned with health learn to work together more effectively?

*Evaluation, Planning and Priorities* — how may we learn to plan more realistically and to set our priorities more intelligently? More objectives and accurate methods of evaluation are needed as a basis for planning.

*Decision-making* — inherent in every one of these challenges and needs much more study.

*Recruitment* — how may more of the more capable people be attracted into the public health professions?

#### DEPARTMENT SECRETARIES



## Maternal and Child Health

THE advisability of emphasizing maternal and child health at this time is related to the need for a better understanding of reproduction, growth and development, and to the realization that application even of current knowledge is less than satisfactory.

Basic problems relating to reproduction such as fertility and infertility, pregnancy wastage, and premature labor command the attention of investigators. Advances in research in such fields of study will, no doubt, make possible marked progress in maternal and child health. Moreover, the outstanding beginnings that have been made in the study of child growth and development raise questions of the relationship of growth characteristics to health and adaptation to environment. Commenting on the increased size and rate of growth of the present generation, Dubos asks whether these are desirable attributes. "There is no evidence," he says, "that these criteria have much bearing . . . on the individual's ability to adapt to the complex demands of modern technology." We can look forward to increasing refinements of knowledge of growth and development.

However, the knowledge now available has not yet been adequately applied to programs for children and therefore potential results are far from being attained. Great as the reduction in infant mortality has been in the industrialized countries, there is sound reason to believe that a rate less than half as great as that now prevailing could be achieved if currently available knowledge were fully and effectively employed. In many of the developing countries rapid improvements in child health are beginning to be achieved. But to assure continued advances calls for reappraisal of existing methods of child health services, imaginative trial of new methods, development of additional personnel, and perhaps of new types of personnel.

Problems of survival — reduction in maternal, infant, and childhood mortality rates — are a part of the general problem of diminishing the extent and severity of ill health. The effect of impaired health and of adverse social and other environmental conditions during childhood upon the individual when he is in his adult years is a vast area yet to be explored in all of its complexity.

### Back row:

DR. ROBERT REED  
MARGARET CARNEY  
CHRISTINA MAC ASKILL  
OLIVIA BRUM  
MIRIAM EKDAHL  
DR. EDWARD MASON

### Front row:

DR. HAROLD STUART  
DR. WILLIAM SCHMIDT, DEPT. HEAD  
ELIZABETH RICE  
DR. ISABELLE VALADIAN





(l. to r.): DR THOMAS PUGH, DR. ALBERT DAMON, DR. ASCHER SEGALL, DR. BRIAN MAC MAHON, DEPT. HEAD, DR. GEORGE HUTCHISON, DR. EVA SALBER

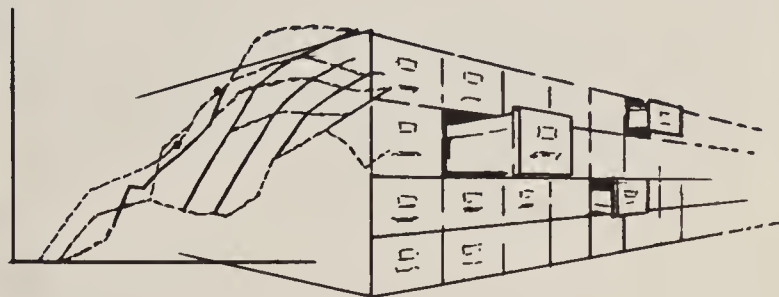
## *Epidemiology*

DESPITE the technological advances of microbiology in recent decades, infectious disease still constitutes a primary problem in most countries throughout the world. In these areas, a major part of the public health effort must, of necessity, be devoted to the control of communicable diseases. As the standard of living rises, these may be expected to recede in importance as causes of morbidity and mortality. Such has been the experience in Western Europe and North America where chronic illness has, within this century, become the major challenge to public health. In the United States, cardiovascular, neoplastic, and metabolic diseases fill an increasing proportion of hospital beds, account for substantial portion of economic dependency, and rank among the major causes of death. As the limits of therapy and palliation in these diseases are more clearly defined, the need for effective preventive measures becomes apparent. Prerequisite to such measures is a sufficient understanding of the underlying etiology and pathogenesis.

The adaptation of classic epidemiologic methods to the investigation of chronic disease represents a significant step towards an eventual control program. Characteristic of this adaptation is the more rigorous application of statistical theory in the design and evaluation of studies. In addition, progress



PORTRAIT OF AN EPIDEMIOLOGIST



in biochemistry, physiology and pathology has provided biological indices whose role in the epidemiology of chronic disease is similar to the microbiological and immunological parameters studied in the field of infectious illness.

Differences in disease distribution between population groups offers clues as to possible etiology. Hypotheses may be formulated and tested in subsequent analytic studies. Epidemiologic evidence of causal association may suffice for the introduction of preventive measures or may suggest laboratory experiments for further elucidation of the pathogenic mechanism.

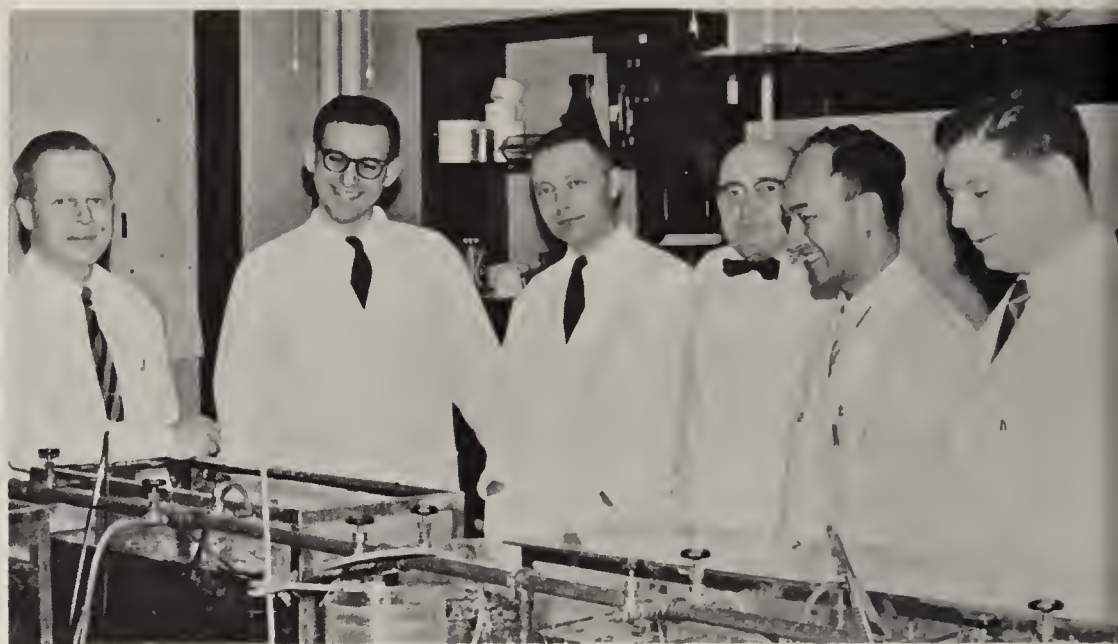
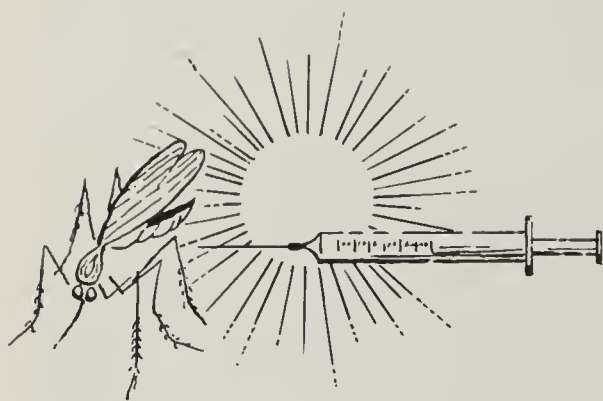
Epidemiologic investigation into the etiology of chronic disease is still in its initial phase. Preliminary findings in such areas as coronary artery disease, cancer and mental illness have been encouraging. Knowledge so gained can eventually be applied to the design of programs of prevention. In this way, we may hope to reduce the burden of chronic illness in those parts of the world where it now constitutes or will one day constitute the major challenge of public health.

(right): A LABORATORY SESSION



(below): THE WORKING GIRLS OF THE DEPARTMENT





DR. THOMAS H. WELLER, DEPT. HEAD, DR. ANDREW SPIELMAN, DR. ELI CHERNIN,  
DR. DONALD AUGUSTINE, DR. CHIA-TUNG PAN, DR. EDWARD MICHELSON

## *Tropical Public Health*

*"As you go through life  
Make this your goal,  
Watch the doughnut  
Not the hole!"*

— From a Children's Song

The simple injunction of the child's verse is nowhere more applicable than to the public health problems now faced by the developing countries of the tropics. The new governments, of all degrees of stability, experience, and vision, are under severe pressure to commit themselves to a host of well-intended schemes designed to alter favorably the prevailing risks of birth, existence, and death. But financial resources and trained manpower are limited, and the emergent national organisms are forced to make choices and to allocate such energies as they possess to meeting the most pressing problems first.

It has been amply documented that the most pressing public health challenges facing the new tropical countries involve the control and prevention of nutritional and infectious diseases. But these must be thought of not only as diseases afflicting only individuals or even populations, but also as diseases from which the whole body politic and the economy of a nation may suffer and sicken. For example, India can hardly afford to lose the estimated 171 million workdays exacted annually from her agricultural population by malaria, nor can she fail to become committed to national malaria eradication when a typical pilot scheme reveals that for every 20 *cents* spent on the program the villagers gained nearly 20 *dollars*. These are huge returns however measured, especially in a country whose annual per capita income is still well below 100 dollars. Malaria happens to be a spectacular case in point of the need to assess national health goals realistically, and of the gross benefits which may derive from the application of soundly-based preventive measures on a mass scale. But many other similar problems in infectious and nutritional disease fall into a similar category of priority, and, for the foreseeable future, they will continue to challenge the viability of the new countries and tax the abilities of their leaders in public health.

DR. I. SCHULTZ  
DR. FRANKLIN NEVA  
L. MATA  
DR. WELLER



In the recent period, the Department of Tropical Public Health has found its challenges in several areas of fundamental research and teaching. In anticipation of the emergence of schistosomiasis as a major problem in tropical areas, a program of research was begun six years ago in the biology and biological control of snail vectors of the human disease. A direct outgrowth of this was the development of a course in medical malacology, the first of its kind to be offered anywhere at the graduate level. Studies on viruses pathogenic in man continue to represent another central interest of members of this department and of their students. The development and perfection of technics for the *in vitro* cultivation of a wide variety of organisms (ranging from "new" viruses to amoebae and snails) are research challenges under continuing study, and intensive work is now beginning in several important areas of medical entomology.

Most students in the HSPH are familiar with the teaching philosophy and program of the Department within the content of the School. But they may not be aware that the Department of Tropical Public Health is also responsible for teaching medical parasitology to second-year students in the Harvard Medical School. This affords a major pedagogical challenge and a real opportunity to convey to each new class, during its formative years, some of the public health concepts and perspectives which are so essential to the physician of today. This is especially needed for many among them are more likely than ever before to practice their profession in one of the tropical areas of the world.

In keeping with the trend within the School toward broadened affiliations with the under-developed countries, the Department of Tropical Public Health is now in a position (in consequence of supportive grants from the USPHS) to provide well-qualified physicians, scientists, and undergraduate medical students with opportunities to gain appropriate clinical, epidemiological, and research experience in selected tropical areas. The challenges implicit in these activities are many and varied, and they carry the additional weight of close identification with long-range national needs and policies.



## Microbiology

THERE are many fascinating problems in microbiology which might be selected as representative of the challenges facing scientists interested in microorganisms. A few of these problems have been chosen as the subjects for research by staff members of the Microbiology Department. In general terms the studies in progress are intended to advance our knowledge in three different areas: (I) to identify the viruses and bacteria involved in the various diseases of the eye which are serious health problems in many areas of the world, and to determine whether transmission can be prevented by immunization.

(II) To extend our understanding of the various species of rickettsiae with particular reference to the immunologic aspects of the rickettsial diseases in man, and to the relations between the microorganisms and their arthropod hosts.

(III) To study the properties of human cells in continuous culture from the viewpoints of physiology, nutrition, and genetics. In this area of research, the interaction of viruses to human cells in vitro is an especially fascinating subject.

Perhaps the most serious challenge to microbiologists who are also interested in public health is the recent tendency of physicians and laymen alike to speak publicly as though infectious diseases have been conquered and no longer constitute problems of importance. The lack of validity of this conclusion, drawn from the current success of the attacks on a few of the major diseases, can be appreciated if one reflects in general on biological processes and in particular on the rapid acquisition of resistance of certain species of microorganisms to therapeutic substances, or of arthropods to certain insecticides. The identification between 1954 and 1961 of more than 100 viruses not known previously, and which are pathogenic for man, should serve to stimulate more concern rather than less, for the study of infectious agents. Since medical schools seem to be reducing the time allotted in their curricula for infectious disease, it becomes all the more important for schools of public health to provide sound knowledge to their graduates in regard to diagnosis, prevention, and control of communicable disease.



(Insert): DR. JOHN SNYDER, DEPT. HEAD

*First row (l. to r.):*

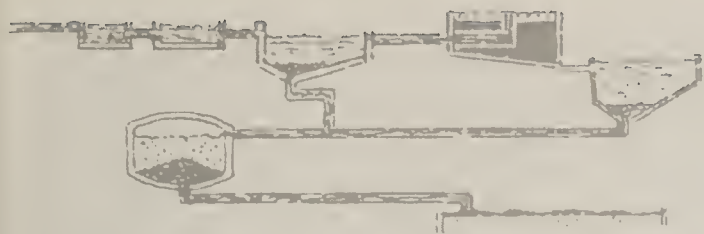
DR. GEOFFREY EDSALL  
DR. SAMUEL D. BELL, JR.  
MRS. SUSAN MYERS  
MRS. REVA KADEN  
MISS HELEN LIEPINS

*Second row (l. to r.):*

DR. YUZURU KOBAYASHI  
MISS CLAIRE CONOVER  
MRS. THERESA ROTA  
DR. ROBERT A. MAC CREADY  
MISS JANE DRISCOLL  
MISS MARY ELLEN HUMES

*Third row (l. to r.):*

DR. FLAVOJUB HARISIJADES  
DR. EDWARD S. MURRAY  
DR. ROGER L. NICHOLS  
DR. ROBERT S. CHANG  
DR. ROBERT B. PENNELL



DR. WERNER STUMM  
DR. HAROLD A. THOMAS, JR.  
DR. J. CARRELL MORRIS  
DR. GORDON M. FAIR, DEPT. HEAD



## *Sanitary Engineering*

THE central thesis of Rene Dubos' recent book "Mirage of Health" is that "each civilization has its own kind of pestilence and controls it only by reforming itself." This thesis has broad implications for those who till the fields of public health. To the engineer it says in particular that whenever man modifies his environment he creates, in spite of usually noble aims, conditions that make for new kinds of dis-ease as well as new kinds of ease. The history of public health is replete with this type of paradox, and the future cannot be expected to be different from the past.

To all of us, Dr. Dubos' wisdom implies that we should devote ourselves to the study and elucidation of principles rather than methods and that we should remain flexible in mind and responsive to change. As public health practitioners, moreover, we should be constantly concerned with the interpretation and application of new scientific discoveries and their impact on our environment.

Characteristic of the pestilences that are besetting the civilizations of industrially and politically advanced countries are the toxic and destructive elements to which their people are exposing themselves in apparently ever-increasing measure in the second half of the twentieth century. At the same time, the microbiological health problems of the younger countries ask for new solutions that lie within the economic potential of the emerging peoples and our organizations for world health.

Perhaps more worrying, however, than our new and world-wide responsibilities is the "technological cynicism," as Sir Charles Snow calls it, that marks the attitude of some scientists in our age. Often this is expressed by shutting off the esthetically desirable from the scientifically tolerable. "Science," Sir Charles has said, "is not ethically neutral." To this I would add: "Neither is it esthetically neutral." Cleanliness and decency, in my opinion, will continue to constitute a large and important component of human well-being, not to say environmental health.





(above) DR. MARY AMDUR

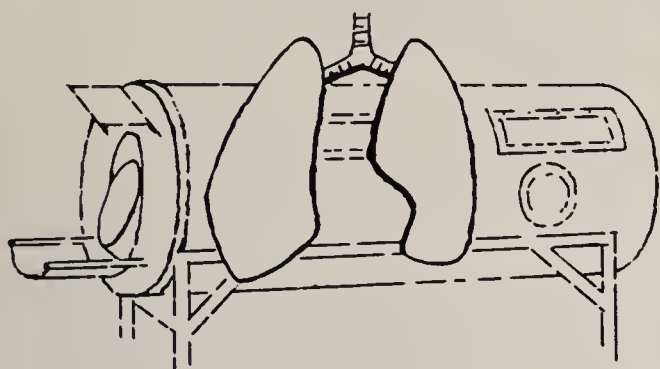
(right) DR. E. P. RADFORD, JR.  
 DR. HARRY MARTIN  
 DR. H. BOUTOURLINE-YOUNG  
 DR. JERE MEAD  
 (seated) DR. W. H. FORBES  
 DR. JAMES WHITTENBERGER  
 DEPT. HEAD  
 DR. B. G. FERRIS, JR.



## Physiology

IN responding to the Yearbook Committee's request, one must be very selective in attempting to describe the challenges that face a department at a particular moment in time. Many of the Physiology Department's activities are in basic research and such activities are not fostered by the urgencies that characterize the times. Rather, research thrives when conditions permit curiosity about natural phenomena to lead persons with prepared and original minds along lines which interest them deeply. Sooner or later the results become "useful," often in unexpected ways. For many years this Department has done research in respiratory physiology, and numerous examples could be cited in which basic information was later utilized in occupational medicine, clinical medicine, design of respiratory protective devices, and other fields. One of the challenges at present is to maintain conditions favorable to independent, original research in spite of growing dependence on financial sources outside the universities, increasing demands for research administration, and other forces which encourage conformity.

In applied research one can point to more specific challenges of the next several years. In parts of the U.S.A. and in several European countries, the combination of population growth and technological "progress" have led to severe stressing of natural resources, for example, the capacity of the atmosphere to dilute sufficiently the waste products of man's activities discharged into the atmosphere. The result is a high economic cost in places like London and Los Angeles, with additional effects on health. Traditional epidemiologists were



reluctant to study the alleged but ill-defined effects of atmospheric pollution, but recent combinations of epidemiologic technique and physiologic measurements of pulmonary function have been fruitful. This illustrates the challenge to physiologists and biochemists to develop new methods for assessing low intensity but long-continued exposure of human populations to a variety of stresses — ionizing radiation, potentially toxic chemicals in the air, food, or water, and other physical factors. In many cases the research will combine physiologic and epidemiologic techniques. The investigator would be able to obtain a pattern of a population's capabilities in terms of physiologic functions — a spectrum of physical fitness, respiratory capacity, renal function, etc., as functions of age, weight, occupational history and other variables.

Other challenges in the environmental field could be listed, such as physiologic and toxicologic problems of limited space flight or prolonged submergence in a nuclear-powered submarine.

Some aspects of the problems mentioned above will be studied in the new laboratories which will become available in 1962. However, the principal challenge is to strengthen the teaching and research programs of the department to attract more well-qualified students and research fellows from home and abroad.





RICHARD DENNIS, PROF. PHILIP DRINKER,  
DEPT. HEAD  
DR. ROSS MC FARLAND  
DR. LESLIE SILVERMAN, WITH  
"MISS PIMMINS"

## *Industrial Hygiene*

THE Department of Industrial Hygiene, with Physiology and Sanitary Engineering, make up the Division of Environmental Hygiene. Included in the Industrial Hygiene Department are part-time physicians, but the function of the department is directed towards the prevention of disabilities, particularly those of industrial origin, and not towards diagnosis and treatment of illnesses of any sort.

These lines of endeavor are not sharply divided and functions, purposely, not too rigidly defined. The very nature of the set-up encourages the closest possible cooperation between the department and our medical colleagues. This has been traditional with us since the School was started. Rooms for the care of prematurely born babies, the iron lung, the determination of optimum "indoor" climates, and of threshold concentrations of various substances in air have been studied for years by our department with results which are useful to the public health.

In 1961 and presumably for the immediate future, we are much concerned with health problems involved in the peaceful applications of atomic energy. Members of our staff serve on important Governmental positions on these developments, and our department has a considerable research grant on air cleaning of effluents from reactor power plants. As a natural corollary we are engaged in fundamental research on air cleaning from the iron and steel plants.



JOSEPH FITZGERALD  
CHARLES BILLINGS  
PROF. DRINKER  
WILLIAM BURGESS  
FRANK MAHONEY  
DR. CHARLES WILLIAMS

OFFICE AND LABORATORY STAFF





DR. ROSS A. MCFARLAND'S AVIATION MEDICINE GROUP

Environmental safety comes within our field and represents an important part of our present obligations and research plans. Living in confined spaces, such as occur in transoceanic submarine cruises, is already here. We do not doubt at all that space travel, with its inevitable long confinement of personnel, will soon be a reality.

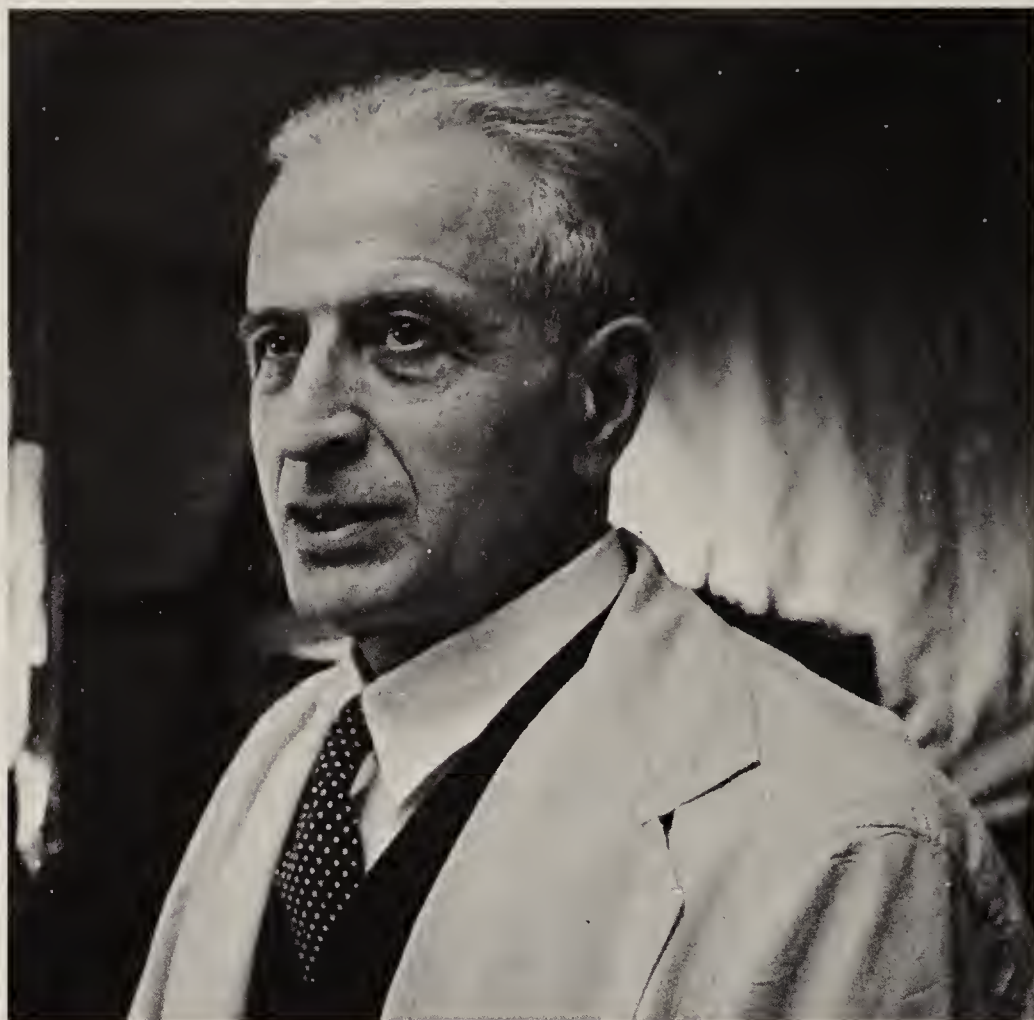
Highway and air traffic accidents have been a major problem among those of us whose interests lie especially within the broad field of environmental safety. We have active projects along these lines today. They are problems which certainly will be with us, we hope in modified form, in the future.

Air pollution and its control are major interests and are certain to continue indefinitely into the future. We offer no miraculous solution to present-day urban traffic, but we are acutely aware of the health problems such congestion and pollution poses.

Industrial noise control comes within our field of interest. We would like to think that the next decade or two would have better answers to noise control than we have today, but we are not that optimistic. Man himself doubtless will devise new appliances, new machinery, and new processes which are noise producers so that the noise problem, with other current perplexities will probably be a bit ahead of us who must help solve the problems.

Our training grant from the Guggenheim Foundation in aviation medicine, and a USPHS grant in air pollution control offer attractive research support for graduate students of both Master and Doctorate levels.





*Constantin P. Yaglou*

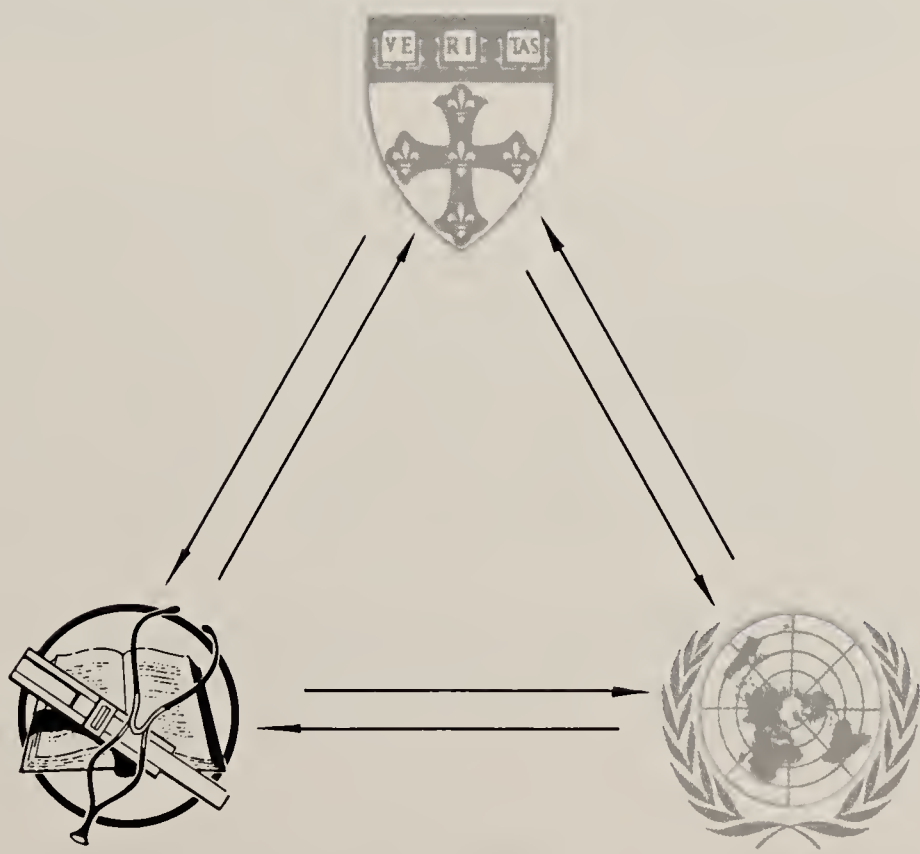
1896-1960

The death of Professor Yaglou on June 3, 1960 terminated his association of 35 years with the School.

Professor Yaglou was born in Turkey of Greek parentage and received his education in Constantinople. Coming to the U.S. as a young man, he received a Masters degree in 1920 from Cornell University. In the next four years he worked in the Research Laboratory of the American Society of Heating and Ventilating Engineers where he developed the concept of the Effective Temperature Scale.

Many aspects of heating and ventilation received Professor Yaglou's attention. Prominent among these was his research leading to creating optimal environments for premature infants which he carried out with Dr. Blackfan. Later Professor Yaglou's work related to climatic preferences of people, ventilation and air conditioning of ships and studies of habitability of climatic extremes. He carried out extensive researches for the Armed Forces during World War II.

The Class of '61 regrets that it could not share in knowing Professor Yaglou as a person and friend, but will especially remember him through the Annual Lectureship initiated this year in his memory.





LEWIS B. CLAYTON, M.D., 2306 Sea Island, Fort Lauderdale, Florida

General practice 1950-1958. Resident in Public Health 1959-1960 with the Dade County Department of Public Health, Miami, Florida; will return to be Director of Research.

THOMAS LIVINGSTON HALL, M.D., 80-A Main St., Concord, Mass.

July 1961 will find the Halls once again returning to Puerto Rico, this time to work in the more suburban setting of the capital city, San Juan. I have an appointment in the Dept. of Preventive Medicine of the Univ. of Puerto Rico Medical School and will have as my principal task directing and coordinating the educational program for fourth year medical students during their three-week rotation at the University Health Center. Since both the Univ. Health Center and the teaching program for students exist at present only on paper, I will have the additional challenge of developing the program as I go. After a few years of experience in teaching Preventive Medicine and Health Center Program development, I hope to go still farther afield, very possibly to South America, to participate in health programs there. Long-range plans, to the extent that our world permits them, will hopefully find me returning to this country for full-time work in the field of academic preventive medicine.

SAMUEL G. McCLELLAN, M.D., 95 Avon Hill St., Cambridge, Mass.

Background prior to coming to HSPH is that of six years in community mental health work, serving as a child psychiatrist and director of a small mental health center in Massachusetts. Horizons and vistas of the future should be much extended and expanded as a result of insights gained and new tools acquired at HSPH this year. I hope to combine clinical, research and administrative activities in a continued career in community mental health practice.



ROBERT L. BRAGG, M.D., 203 Park Drive, Boston 15, Mass.

Training: Public Health — Harvard, 1955, M.P.H.; Medicine — Columbia, 1952, M.D.; Psychiatric training — Medfield State Hospital and Mass. General Hospital. Field: Psychiatry; HSPH concentration area: community mental health.

NORMAN A. SCOTCH, Ph.D., 203 Park Drive, Boston 15, Mass.

I received my formal anthropological training at Northwestern University and later, along with my wife, engaged in field work among the Washo Indians of Nevada and among the Zulu of South Africa. My research interests lie in the area of social and cultural factors in disease. At the School of Public Health I have been able to work more intensively with professional health personnel in a number of areas of health and disease and have, as a result, become a little more sensitive to research situations where an anthropologist might be able to contribute.

ALICE M. HOSACK, 834 South Oakland Ave., Sharon, Pennsylvania

A.M., University of Chicago; S.M.Hyg., Harvard. I will be continuing for approximately another year collecting data for the doctoral thesis. Future plans after that are indefinite.

JOHN H. BAIER, 600 Vine Hill Way, Martinez, California

M.D., Univ. of Wisconsin, 1951. Internship — San Francisco City and County Hospital. Married and the father of three children, the last of which was born during this school year.

Plans to resume the position of Assistant Health Officer, Contra Costa County, California.



IVOR WILLIAM BROWNE, L.R.C.P. & S.I., D.P.M., No. 1, Sandycove Ave., East Sandycove, County Dublin, Ireland

Studied medicine in the Royal College of Surgeons and Physicians in Ireland. Worked in Oxford, England, Dublin, Ireland, and London, England, in that order, where I received my psychiatric training. Since arrival in U.S. I was Clinical and Research Fellow for seven months at the Mass. General Hospital prior to starting at the School of Public Health in September. Ideals: Implementation of community psychiatry in Ireland. Future: Return to Ireland, post indefinite.

LUCY D. OZARIN, M.D., 2200 Federal Office Bldg., Kansas City, Missouri

Since 1939, I have worked mainly in the field of administrative psychiatry, with some medical school teaching and patient treatment activities. In recent years as a U.S. Public Health Service Officer attached to the National Institute of Mental Health, I have served as a consultant in community mental health to agencies in the seven states of DHEW Region VI. I will return to this position.

KENT MILLER, Ph.D., Supervisor of Mental Health, Leon County Health Dept., Tallahassee, Florida, 2211 Jim Lee Road, Tallahassee, Florida

Director of Mental Health Clinic last five years and Consulting Psychologist, Florida State Board of Health. Major interest is in community mental health with particular emphasis upon training and research programs in this area.



JOHN D. F. TARR, M.D., 316 N. Bailey St., Los Angeles 33, California

Peripatetic past: lived S. Africa (12 years), India (5 years), France (2 years). Recent "roles": psychiatric assignment in USAF. After internship then public health residency Los Angeles City Health Dept. Conjugal family orientation: Beverly received her public health degree this year. Ideal: international amity through understanding. Anticipatory aspirations: additional psychiatric experience and international technical assistance programs.

DJORDJE KOZAREVIC, M.D., Federal Institute of Public Health, Sauska No. 35, Belgrade, Yugoslavia

Past experience has included general practice and membership on the Medical Faculty in the Belgrade Institute of Occupational Health. Current plans are to return to the Federal Institute of Public Health to work on problems of comprehensive medical care and the establishment of a school of public health in Belgrade.

GORDON S. SIEGEL, M.D., 8014 Jeffery Ave., Chicago 17, Ill.

Graduate of University of Chicago School of Medicine, 1954. Officer of U.S. Public Health Service since 1954. Completed residency in internal medicine at Boston, and residency in public health with New York State Health Dept. Particular fields of interest are: medical care administration, with emphasis on methods of translating clinical and administrative research findings into clinical practice; and occupational health, as a means of integrating adult health programs and investigating the import of industrial society and technology on human health and welfare.



DON R. VAN WYNGARDEN, D.D.S., Rt. 13, Box 2, Kirkwood 22, Missouri

Since 1955 has been associated with the St. Louis County Health Dept. in Missouri and will return to the position of Director of Dental Health in July 1961.

ILGA DINBERGS, M.D., 34 Camden St., Methuen, Mass.

Born and grew up in Latvia. Graduated from the University of Munich, Germany, in 1954, at which time came to the United States. Internships in Quincy City Hospital and St. Vincent's, Worcester, Mass., 1954-56, thereafter a resident in chronic diseases, my chief interest.

VIRGINIA BYRON, 2151 Berkeley Way, Berkeley, California

Born and grew up in Salt Lake City, Utah. Graduate of University of Utah. Graduate work at the Tulane University of Louisiana, New Orleans. For the past six years, I have been a resident of San Francisco, a city which I now consider my home. I will be returning there in September to continue my work with the California Health Department.



PETER S. BING, M.D., 9700 W. Pico Blvd. Los Angeles 35, California

A.B., Stanford Univ.; M.D., Cornell Univ. Medical College; Internship at Bellevue Hospital in NYC. Future plans: will join the USPHS in Washington, D.C., to work in the field of medical care evaluation and administration.

NAOMI OSTERMAN, 143 Porter St., Providence 5, Rhode Island

B.S., Boston University; MSW, Boston University, 1953. Past interests have been in Pediatric Social Service and Child Guidance. Future work will involve teaching social work.

HARRY M. RAULET, Ph.D., 603 High St., Westwood, Mass.

My past professional life has consisted primarily in teaching anthropology and sociology in a liberal arts setting, most recently at Bard College in New York State. Participation in the public health world at the Harvard School of Public Health has been something of an "acculturation experience." I have aimed at developing familiarity with the problems, techniques, and values of the public health profession in order to discover the ways in which I, as a social scientist, might participate most effectively in its work. My field of concentration has been in Public Health Practice; I anticipate working in administrative and epidemiological research and in teaching. I am married and have three school-age children.



GEORGE C. DENNISTON, JR., M.D., 7818 Crefeld St., Philadelphia 18, Pennsylvania

The problem of overpopulation is one that will, of necessity, increasingly concern public health. Disease prevention will not be as effective unless population pressures are taken into account. I believe that more research is needed: biological, epidemiological, and sociological. The role I may be able to play is not yet clear. In the immediate future, I will be with the Epidemic Intelligence Service practicing shoe-leather epidemiology, a role which highly appeals to me.

STEPHEN J. PLANK, M.D., P. O. Box 2005, Carmel, California

During the five years before coming to the School of Public Health, I was in practice in Panama. Many of the medical problems there, especially among children, seemed directly related to the families' low income and high fertility. Beyond the effect on individual health, excessive fertility in such regions also aggravates public health problems in nutrition, sanitation, and communicable disease. Because of this close relationship, public health efforts will be increasingly directed toward alleviating the population problem. This is the area in which I expect to be working.

PREM VIR GULATI, 31/5, Patel Nagar East, New Delhi — 12, India

Graduated in 1953 from Medical College Amritsar, Punjab, India; completed internship in medical and surgical wards in Delhi and Karnal. Joined India-Harvard-Ludhiana Population Study, Khanna Dist. Ludhiana, Punjab, India, in Dec. 1954, as supervisor, and worked there until June, 1960, when I came to the HSPH. Plan to return to India in August, 1961, and join a medical teaching institution in the Dept. of Preventive Medicine to fulfill my ideal of a good teacher and research worker. Special interests are family planning, social medicine and stressing the need of preventive and social medicine in the minds of the coming generation of doctors.



ARTURO A. LIBREA, M.D., C.P.H., 68 Diez de Julio Str., Lipa City, Philippines  
M.D., 1942, College of Medicine, U.P., C.P.H., 1955, Institute of Hygiene, U.P. Recipient of the Philippine Public Health Association Gold Medal for scholarship, 1955. Medical Officer and Acting City Health Officer, Lipa City, Phil., 1948-1956. My chief interest is Biostatistics, its role in the medical and public health field. Will return to previous position as Assistant Professor, Institute of Hygiene, U.P.

GEORGE T. OSSI, M.D., M.P.H., Mosul, Iraq

I am back at Harvard for a second year of advanced training in Public Health and preventive medicine. I have been especially interested in the seminar for teachers of preventive medicine because I expect to teach this subject at the University of Baghdad.

I believe the students in this class have unusual opportunity to exchange ideas and to solve their own teaching problems. This exchange of ideas results in a better understanding of what is going on in the countries represented as well as of the modern trends in teaching this subject.

WADIE WANIES KAMEL, M.B., B.Ch., % Evangelical Church, 13 Mankrios Bishara Street, Koubba Gardens, Cairo, Egypt (U.A.R.)

I graduated from Ein Shams University Medical School, Cairo, in January, 1955, and then spent 16 months as Clinical Assistant and House Officer in Ein Shams University Hospital. In June 1956 I resigned from the Hospital to accept the job of a Medical Officer in UNRWA at Gaza Strip.

My wife and I have one daughter, Phoebe, born in Boston in 1960.

I have broad interest in the teaching and practice of preventive medicine and public health. As for my future career, whether as a teacher or as a practitioner, I am planning to continue working with UN agencies.



DR. FAROUK FARIO FARAGALLA, 3 Karam St., Choubra, Cairo, Egypt (U.A.R.)

M.D. Vet., Faculty of Veterinary Medicine, 1954; subsequently lectured in Dept. of Biochemistry until coming to HSPH in 1957. S.M. Hyg. (Nutrition), HSPH, 1960. After completion of studies in Nutrition Department, plan to return to Egypt to teach nutrition and continue research in population nutrition.

HSIANG JU LIN, 239 East 79th St., New York, N.Y.

My present work concerns the biochemistry of cells grown in continuous culture, a line of study which I would like to pursue in the future.

SERENE LOCHAYA, 668 Lardya Road, Thonburi, Thailand

Spent two years as research assistant in nutrition at University of Wisconsin. Now working for D.Sc. in Hygiene in Nutrition under Dr. Jean Mayer on the problem of obesity. Will be instructor in nutrition at Kaselsart University, Bangkok, Thailand.

Choice of food, not lack of food, is the major problem in Thailand. To improve food habits of Thai people, nutritional education is needed.

BEVERLY BULLEN, 87 Eliot St., South Natick, Mass.

At present I am working on research data for the doctoral thesis in the Nutrition Department. This involves a study of obesity in adolescent girls, including nutritional and activity aspects of the problem. This work is preliminary to continued research in nutrition at HSPH.



JAMES E. HERTZOG, M.D. (Capt., USA), R.D. #2, Ebensburg, Pennsylvania  
 B.S., Franklin and Marshall College, 1953; M.D., University of Pittsburgh, 1957; Internship, Polyclinic Hospital, Harrisburg, Penna., 1958; Commissioned U.S. Army Medical Corps, 1958. Family consists of wife Janet, and three children, Eric, Amy and Kurt. Attending the Harvard School of Public Health is Phase I of the three-phase residency program in aviation medicine. Phase II and III will be spent at the School of Aviation Medicine, Brooks AFB, Texas, leading to board qualification and a career in Army Aviation Medicine. Primary interest: the human factor aspects of aviation medicine.

CLINTON L. HOLT, M.D. (Major, USAF, MC), Hoople, N. Dakota  
 Antioch College, 1946-49; Western Reserve University School of Medicine, 1949-53; USAF since 1955. Hopefully, will continue in the active and practical application of Aerospace Medicine in the USAF.

ROLAND H. SHAMBUREK, M.D. (Capt., USA), Killeen, Texas  
 Married; three children. Undergraduate and Medical School at the University of Wisconsin; received M.D. in 1953. Entered the U.S. Army in 1954. Completed the U.S. Naval Aviation Medicine Course in 1957 and since then duties have been predominantly concerned with Aviation Medicine. The next two years will be spent at the USAF School of Aviation Medicine, leading to board qualification in Aviation Medicine.



LOUIS H. CARGILL, M.D. (Capt., USAF, MC), 21 Silver Spring Road, West Orange, New Jersey

A.B., Wesleyan University, 1951; M.D., the University of Rochester, 1956; Intern in Medicine, University Hospitals of Cleveland, 1956-57. Entered the United States Air Force in 1957. Currently a student in the USAF Advanced Course in Aviation Medicine. From Harvard will continue studies at the Aerospace Medical Center, Brooks AFB, Texas. Career plans: Aerospace Medicine, USAF.

JAMES F. WITTMER, M.D. (Capt., USAF, MC), 226 Hubbell St., Houghton, Michigan

M. D., Washington Univ., 1957; USAF Flight Surgeon, 1958-present. Presently in USAF Specialty Training Program in Aviation Medicine. Plans: Career in aerospace medicine, in teaching, research, and administration.

RICHARD LOYD MASTERS, M.D. (Capt., USAF, MC), Detroit, Michigan

B.S., Wayne University, Detroit, Michigan, 1953; M.D., University of Michigan, 1957. Following internship, I entered the United States Air Force and served for two years as a Flight Surgeon. I intend to remain in the Air Force and am currently engaged in the Aviation Medicine Specialty Training Program.



NEIL A. GAETA, 88 Francis St., Apt. 2, Boston, Mass.

Graduate of Tufts College, B.S. (1954) and M.I.T., M.S. (1956) with major in chemical engineering. Hope to work in nuclear engineering field as atomic power comes into prominence. Radiation and industrial hygiene problems will offer a real challenge.

ROBERT E. YODER, 5705 Wythe Ave., Richmond 26, Virginia

Past: 1. Health Physicist at Oak Ridge National Laboratory; 2. Instructor in Radiological Hygiene at the Harvard School of Public Health 1957-1960. Future: Undecided.

"The world faces a changed environment with the advent of nuclear power and large scale air pollution. This School must face this changed environment and conduct research pertinent to easing man's suffering in this new era."

DONALD G. SILVA, 1 Lt., USAF, MSC, 2324 Tiemann Ave., Bronx 69, N.Y.

I was graduated from Manhattan College, New York City, in June '57 as a Bachelor of Civil Engineering, majoring in sanitary engineering. My initial tour of duty in the USAF Medical Service was at MacDill AFB, Florida, a Strategic Air Command medium bomber base. From Aug. '57 to Aug. '60 I worked with the engineering aspects of the adverse effects of working and community environments. My part on the Air Force Preventive Medicine physician-engineer team enabled a direct approach to reduction of these adverse effects. I hope to continue my Air Force environmental health career in the field of strategic missile operations.



SUSUMU YOSHIZAWA, Institute of Public Health, 39 Shirogane — Daimachi — 1 Minato-ku, Tokyo, Japan

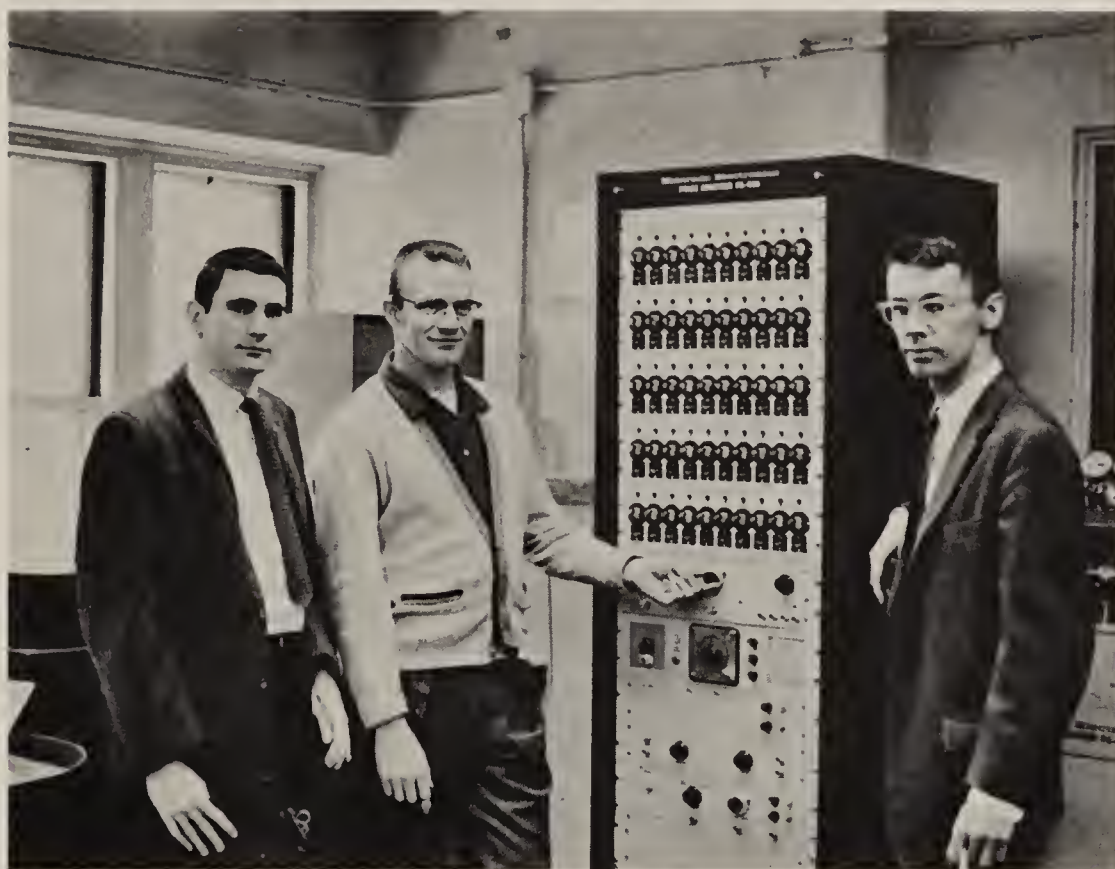
Whether or not a building will provide a healthy, functional and comfortable space for human activities is fundamentally decided when it is designed. Any serious architects today are confronted with newly arising problems and stronger demands for solutions to older environmental problems. Someone should give the correct answers, because, with or without these answers, they are building spaces for tomorrow's human activities. Reunion of various fundamental engineering and physiological sciences with architectural design and building engineering is what I have in mind for the future.

JAMES D'ARTH, B.Sc. App., 14 Nash St., Mount Isa, Queensland, Australia

Like many of those who enter the field of Industrial Hygiene, my basic training was in another area — industrial chemistry. My more recent experience is in primary metallurgy, in the supervision of smelting processes and the men who work in them. I believe a background of experience in supervision and operating gives an industrial hygienist a better chance of "getting through" to plant operators, and a chance to show that he can help them.

NORMAN J. PETERSEN, Sanitary Engineer, USPHS, 215 Grove St., West Roxbury 32, Mass.

Upon graduation from the University of Wisconsin with a degree in civil engineering in 1955, I was assigned to an enteric disease investigation team with the U. S. Public Health Service. In addition to these epidemiological activities, I have participated in Public Health Service environmental sanitation and vector control projects in southern and western U. S. My activities have also included public health engineering work with the Milwaukee Health Department. In the future I expect to be involved in epidemiological studies concerning the effects of ionizing radiation on man.



GEORGE ROBERT HOLEMAN, M.S. E'ng., Box 219, Danville, Kentucky

Graduated in June, 1960, from Centre College of Kentucky. I am married and have a son who was the first boy born at the HSPH International House. I would like to enter college teaching, but will probably go into industry preferably in the South or Southwest. I now hold an AEC Fellowship in Health Physics and I hope to continue my education.

ALFRED W. WESTERN, 2001 Ingram Ave., Richmond, Virginia

Rebel by birth and choice, ex-marine, ex-police officer, graduate of University of Kentucky. Commissioned officer in the Public Health Service. Current studies: radiation hygiene. Future plans: Uncertain.

ROBERT H. NEILL, Division of Radiological Health, USPHS, DHEW, Washington 25, D.C.

Stevens Institute of Technology, 1951; graduate training at Georgetown Univ. and Harvard Univ. As an engineer, I hope to work on the problems and challenges of Radiological Health in Public Health.



VIRGINIA ROSE HANNON, 227 West Lake Drive, N.W., Atlanta 14, Georgia

My past has been hectic, perhaps even checkered. I have worked for various Family Service agencies, for a school of social work, for a state mental hospital and for the National Red Cross. This has kept me busy moving around the U.S. and Europe. Since I enjoyed the life I led, my future is apt to be marked by a consistent interest in mental health carried out in a zigzag geographic pattern.

THOMAS R. BRIGANTE, Ph.D., 49 N. Main St., N. Easton, Mass.

Before coming to HSPH, I served as staff counseling and research psychologist at Brockton V.A. Hospital. My graduate training was at Boston University, where I received a Ph.D. in 1956. My wife, Mary Ellen, and I have two children, Ruth and David. Future plans are to seek a position which combines teaching, practice and research in community mental health. This could be either in a community or in a clinic.

RUTH GRUSCHKA, 44, Rachel Imenu St., Jerusalem, Israel

M.S.W., Washington Univ., 1951. Past experience has been in social work in mental health and public welfare settings. For the future I envisage working in the area of community mental health and social work teaching in Israel.



CHARLES EDWARD CHERUBIN, 1736 E. 55th St., New York City 34.

M.D., State Univ. College of Medicine, New York State; Internship, Long Island College Hospital. Special field of interest is epidemiology of infectious diseases. Will enter the USPHS Communicable Disease Center on completion of this year's studies.

ALFRED KOGON, M.D., 18 Harrison Ave., Brooklyn 11, N. Y.

After I entered medical school, where my ambitions went from biochemistry to pathology, neurosurgery, neurology, dermatology and obstetrics, I interned as a budding surgeon until duty to God and country called me to the USAF and Morocco. While there, I became interested in infectious disease and the underdeveloped world which brought me to Harvard in search of epidemiology.

LLEWELLYN J. LEGTERS (Capt., MC, U.S. Army), Clymer, N. Y.

B.A., Univ. of Buffalo, 1955; M.D., Univ. of Buffalo, 1956; Internship, Akron General Hospital. Entered on active duty with the U.S. Army in 1957. Has served with parachute units in the U.S., Alaska and Europe. Plans are to serve a residency with the San Mateo County Dept. of Public Health in California and eventually obtain a Dr.P.H. in Tropical Public Health.



HOMER L. REIGHARD, M.D., Chief, Medical Standards Division, Bureau of Aviation Medicine, Federal Aviation Agency, 10220 Hatherleigh Drive, Bethesda, Maryland

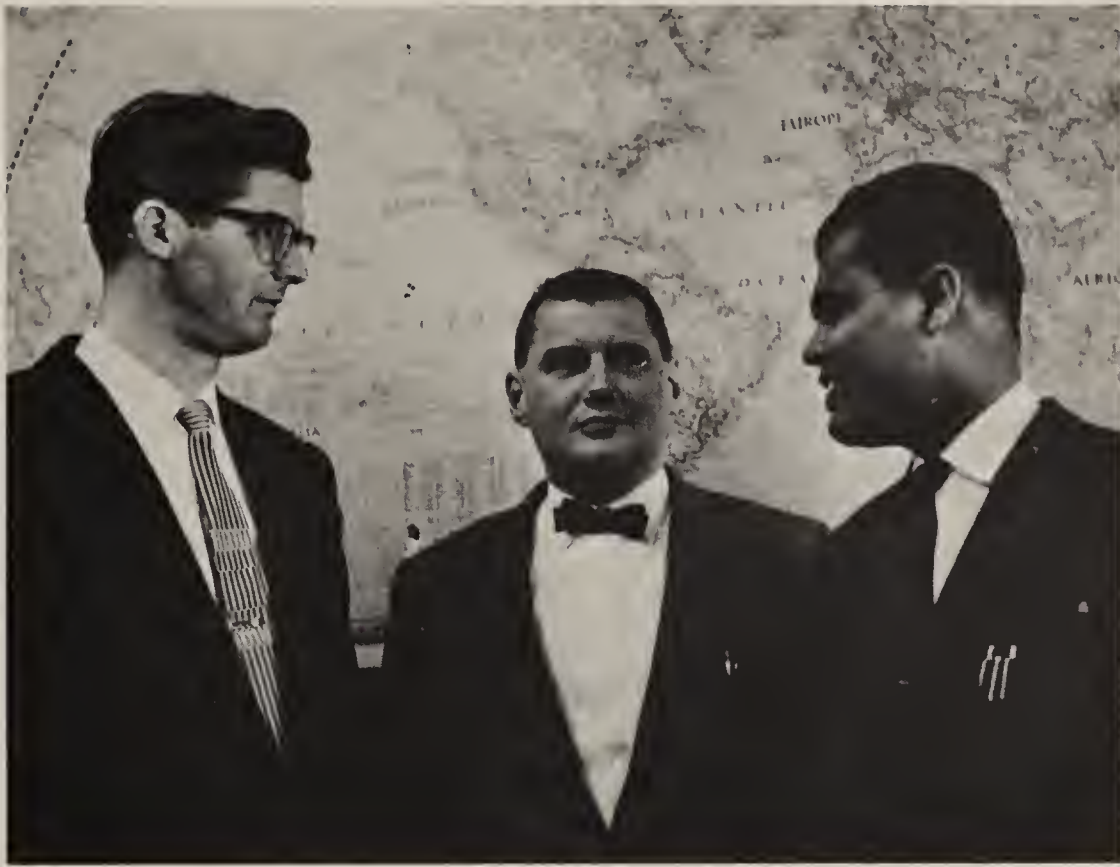
In 1948 I graduated from Temple University School of Medicine. From 1953 to the present I have served on the medical staff of the Civil Aeronautics Administration and its successor, the Federal Aviation Agency. In my present position I am responsible for the development of the medical regulations, standards and procedures which apply to all civil airmen and direction of the medical phase of the investigation of civil aircraft accidents.

WILLIAM ALLAN MAHON, 87, Livingstone Avenue, Grimsby, Ontario, Canada

Educated at Edinburgh. Presently a trainee in Clinical Pharmacology and research fellow in Pharmacology at Harvard Medical School. My purpose in attending the School of Public Health is to obtain a background for design of clinical trials, which I hope to be in a position to design in Canada.

GEORGE C. MOHR, M.D. (Capt., USAF), 42 Joan Rd., Hyde Park, Mass.

I was born in Cresco, Iowa, and was graduated from Luther College, Decorah, Iowa, with a BA degree, majors in biology and chemistry. In 1951, I entered Hertford College, University of Oxford, England, as a Rhodes scholar. After taking schools in animal physiology, I enrolled at Harvard Medical School. Upon completion of a general practice internship at the University Hospital, Ann Arbor, Michigan, I entered on active duty as a medical officer in the USAF. Currently, I am a flight surgeon and regular officer, interested in aviation medicine.



LT. COL. DONALD J. STRAND, 300 2nd St., N.W., Mandan, N. Dakota

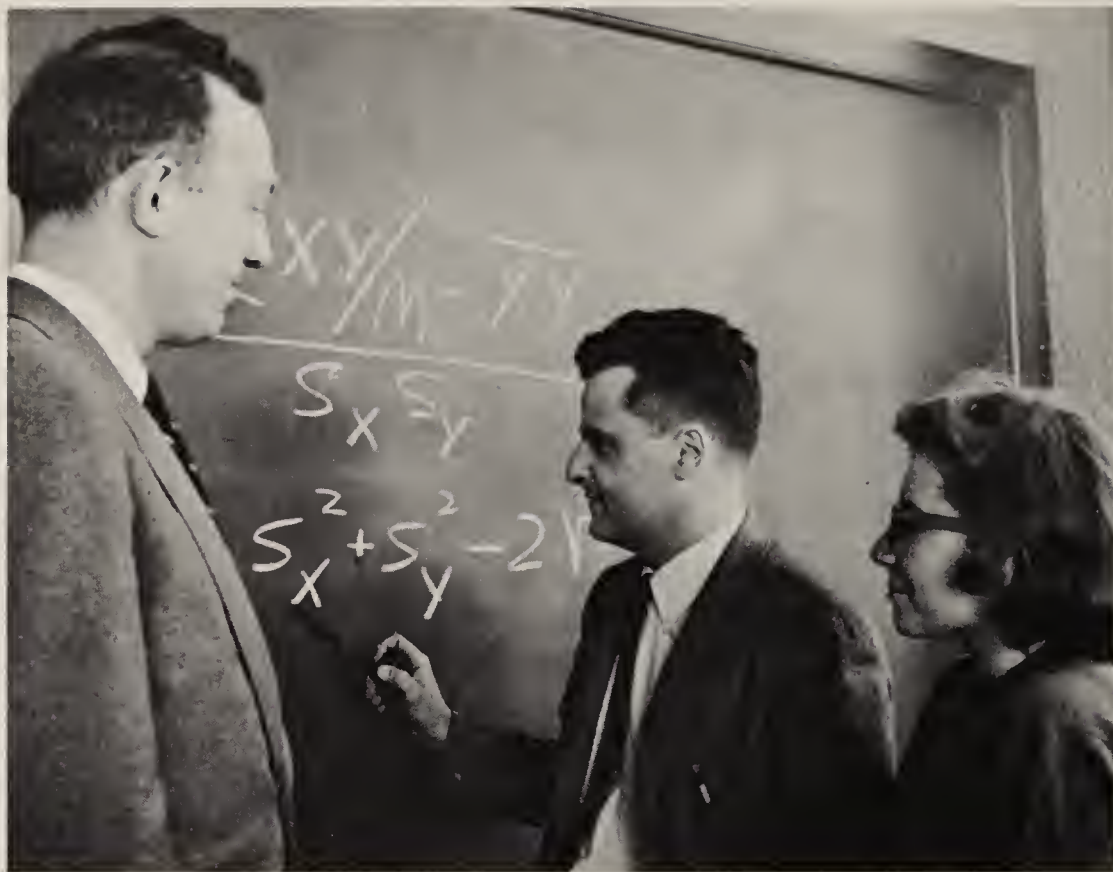
Fifteen years of military medical practice in various countries have made me feel the need for more medical personnel in the preventive aspects of the profession and brought me to Harvard. I hope to continue in the administration and teaching of preventive medicine in the Army and later in civilian life.

JOSEPH JOHN SMITH, CAPT., MC, USA, Wood-Ridge, New Jersey

M.D., N. Y. State College of Medicine. Career medical officer in the U. S. Army with interests in preventive medicine and Staff and Command. I intend to begin my residency training at King County, Seattle, Washington, on completion of HSPH.

SATYABRATA KAR, M.B., B.S., D.P.H., Department of Preventive Medicine, S.C.B. Medical College, Cuttack — 1, Orissa, India

Graduated in medicine in 1953 from Utkal University, Cuttack, Orissa, India, and then worked as a house surgeon in S.C.B. Medical College Hospital, Cuttack, for a period of 18 months. During the period 1954-1958 I was in charge of various state health offices and also got my special training in filariology and D.P.H. Since 1958 I have been a staff member of the Department of Social and Preventive Medicine of S.C.B. Medical College, where on my return I shall continue as Assistant Professor of Social and Preventive Medicine.



C. MARTEL BRYANT, M.D., 23 Millpond Road, Sudbury, Mass.

Future plans: Remain in Boston for next few years for further training.

HANS B. NEVINNY-STICKEL, M.D., 150 Warren St., Newton Center 59, Mass.

I have been involved in cancer research and clinical trials of new chemotherapeutic drugs. My interest is in cancer epidemiology, designing of trials, proper analysis of obtained data and searching for cellular prognostic factors in hormone-dependent breast carcinoma.

MRS. JANE MENKEN, 2472 77th Ave., Philadelphia 50, Pa.

A.B., University of Pennsylvania, 1960. Plans: To remain in Boston while her student husband obtains his M.D. A future hope is to teach biostatistics.



DANIEL G. SEIGEL, 574 Maple St., Brooklyn 3, N.Y.

M.S. in Hyg. from Columbia School of Public Health. Worked as a biostatistician with the N.Y. State Dept. of Health from 1953-1957. Will work for the A.B.C.C. in Japan after completion of this year at HSPH.

YVONNE M. M. BISHOP, 9 Belsize Road, Worthing, Sussex, England

Will be instructor in Biostatistics Department at HSPH next year.

DR. MALCOLM A. FERNANDO, 72 New Bullers Road, Colombo 4, Ceylon

At present I am a lecturer in the Dept. of Public Health, and will continue in the same post on my return.



KUNG-PEI CHEN, M.D., M.P.H., Dr. Med. Sc., 107, Jao-ho St., Taipei, Taiwan, China

Professor and Director of Institute of Public Health, College of Medicine, National Taiwan University. Research field: body compositions of Chinese in Taiwan and studies on endemic goiter.

ROBERT H. DUNN, M.D., 45 Vinton St., Melrose, Mass.

B.S., La Sierra College, Arlington, Calif.; M.D., College of Medical Evangelists, Los Angeles, Calif., 1942; Internship, White Memorial Hospital, Los Angeles. Married and have 4 girls and 3 boys. Medical missionary 1947-1960 in China, India and Burma sponsored by the Seventh Day Adventist Convention. Will be returning to missionary work.

DR. ANTHONY CHARLES IRVINE ADAMS, % Mr. N. D. Adams, "Advertiser Newspapers Ltd.", King William St., Adelaide, South Australia

Graduated from Medical School, University of Adelaide, South Australia, November, 1959. Interned at the Royal Adelaide Hospital immediately before coming to HSPH. Interests lie in the public health problems of the Western Pacific and Southeast Asian areas; future as yet undecided.



DR. VEDAT F. AKAY, School of Public Health, Ankara, Turkey

M.D., D.P.H., University of Istanbul, Turkey. Will remain at HSPH for an additional year. Special field of interest is Physiology.

HARRY Y. SPENCE, % U. S. Public Health Service, Dept. HEW, Washington 25, D. C.

Family: 1 wife, 1 daughter, 2 poodles. Background: Undergraduate work, Univ. of Oregon and Univ. of California; M.D., Medical College of Virginia, 1945; Pediatric residency, 1946-48; Pediatrician, Arizona, 1948-51; USPHS overseas and at Washington since 1951. Interest: International Health.

DR. MARIE T. SHAHIDI, Mashad, Iran

After graduation from college, I entered the Medical School in Mashad for six difficult, but enjoyable, years, following which I served as an intern at Shareza Hospital. The growing need for public health service and organization in Iran enhanced my desire to pursue my medical training in this field. It was a great pleasure for me to come to U.S.A. and to study at the Harvard School of Public Health. I'm sure that the knowledge gained during my studies at the School of Public Health will help my work with the health problems in Iran.



TAKUYA HAYASHIDA, 318, 4-Chome, Torikai-Machi, Fukuoka, Japan

I received a Bachelor's degree and Master's degree from Kyushu University School of Agriculture, Fukuoka, Japan, and was appointed as a Research Fellow in Nutrition at the Harvard School of Public Health. The main subject of my research in recent years has been lipid nutrition. My current interest is in some aspects of the polyunsaturated fatty acids which are known as essential fatty acids. I hope to have a career as a research investigator in fundamental nutrition.

MARILYN THOMPSON, 574 Huntington Ave., Boston 15, Mass.

Past has been mainly medical research. After graduation, hopefully, I will teach in Africa in the Overseas Youth Program.

SHU YUASA, Dept. of Epidemiology, Institute of Public Health, Shioganedaimachi, Shiba, Minato-ku, Tokyo, Japan

At the Institute of Public Health I have been working on demography, vital statistics, and the epidemiology of cardiovascular and infectious diseases. I expect to return to work on the epidemiology of cardiovascular disease and cancer at the Institute, which is a part of the Japanese Ministry of Health and Welfare. This office is concerned with investigation of public health and the education of public health workers.



ABELARDO TEMOCHE, M.B., M.D., Dr.M., M.P.H., Leon Velarde 316, Lima, Peru

In 1949 I graduated from the Medical School of San Marcos University, Peru, and have worked in public health ever since. I received a Master of Public Health degree at Harvard in 1953. Future field: Statistics, Ministry of Health, Peru.

LEONARDO MATA-JIMINEZ, El Alto, Guadalupe, Costa Rica

Univ. of Costa Rica, 1957 — Licentiate in Microbiology; HSPH, M.S. in Hygiene, 1960; Candidate for Doctor of Science in Hygiene, concentrating in Tropical Public Health with majority of time in viruses. Will work for INCAP as Chief of Division of Microbiology. Intends to study the relation of infectious diseases to nutrition in kwashiorkor.

IRWIN SCHULTZ, M.D., 7440 Emerson St., Morton Grove, Illinois

Trained in internal medicine, excited by infectious disease and hopeful of teaching both subjects to medical students of Northwestern University by stimulating their interest in virology.



M.-FRANCOISE HALL, M.D., 80-A Main St., Concord, Mass.

Since third year medical school, I have added to the simple life of "just" medicine the joys and tribulations of motherhood. The combination of Eric (4) and Tefel (1) and medical work among the underprivileged in Puerto Rico all have combined to make life interesting indeed. I hope, next year, to complete my M.P.H. in Spanish at the University of Puerto Rico School of Public Health and thereafter work in Maternal and Child Health in underdeveloped countries.

DONALD O. ANDERSON, M.D., Dept. of Preventive Medicine, Faculty of Medicine, Univ. of British Columbia, Vancouver 8, B.C.

A graduate of the Univ. of British Columbia (M.D., 1954), I am married and have two children. I came to the HSPH from a background of clinical medicine to learn the research skills and techniques in the study of non-infectious disease etiology; I am also interested in using this methodology in the study of problems in medical service utilization in British Columbia. On return to the University of B.C. I will be a full-time Assistant Professor in both the Depts. of Medicine and Preventive Medicine with relatively unlimited opportunities to develop a Division of Epidemiology, and a program of epidemiologic research. My main field of interest for future research will probably be the epidemiology of chronic non-tuberculous respiratory disease.



HOWARD W. JACKSON, Proctor St., Hopkinton, Mass.

Former teacher of chemistry, physics and mathematics in secondary schools. Since 1952, has been working for the Liberty Mutual Insurance Company as a safety engineer, later industrial hygienist, then radiation hygienist. Awarded an AEC Fellowship for 1956-57 and received M.S. from HSPH. Presently studying on a part-time basis in radiation as a provisional S.D. candidate.

RICHARD F. WHITE, M.D., 795 Placer Road, Auburn, California

Have spent five years in the past in public health — in federal, state and local levels working in the laboratory, field investigations and administration. For the last three years I have been Director of Public Health for a local health unit in California.

Future goals are continued work in the broad field of public health; the more varied the experience, the better.

EDWARD E. HUNT, JR., Ph.D., 77 Magnolia Avenue, Magnolia, Mass.

A postdoctoral fellowship has brought me here for inspiration from the study of biostatistics and epidemiology. Concurrently, I hold an assistant professorship of anthropology at the Harvard School of Dental Medicine, where I teach human evolution and genetics, and the physical growth of children. My main research base is the Forsyth Dental Infirmary. I am a physical anthropologist with field experience in Micronesia and Australia. My main interests are in the evolution and life cycle of the human body, and in human genetics.



JOSÉ MARÍA VANELLA, born of immigrant parents in Córdoba, Argentina, obtained a medical degree at the University of Córdoba in 1942. For two years was a physician at the Children's Hospital of Córdoba; in 1945 appointed Director of the Dispensario de Lactantes (infants) and pediatrician of the Regional Hospital at Río Cuarto (Argentina). From 1952 through 1954 Research Fellow at the Virus and Rickettsial Branch of the C.D.C. in Montgomery, Alabama. From 1955 to 1956 practiced pediatrics in Río Cuarto, Argentina. From the end of 1956 to date: Professor of Virology at Córdoba University, appointed to start and organize the Virus Institute of the School of Medicine. On my return will continue in that position. Main interest: people . . . and viruses.

JOHN EDWARD DAVIES, M.B., B.S., Asst. Health Officer, City of Winnipeg, 177 Campbell St., Winnipeg, Manitoba, Canada

Having enjoyed ten years in general practice in South Wales, moving to Canada in 1957 gave me an opportunity to enter the field of public health. The challenge that this field offered was the opportunity of service to a wider group of people, and one ideal seemed a much closer growing together of the two fields of medicine — the private physician and the community doctor.

HUGH S. FULMER, M.D., 111 Edgemoor Drive, Lexington, Kentucky

M.D., State Univ. of N.Y., 1951; Intern, Rhode Island Hospital; Diplomate, American Board of Internal Medicine; married, two children. Will return to my previous position of Asst. Professor, University of Kentucky Medical Center, Dept. of Community Medicine.

HERSCHEL C. LAMP, M.D., % T. C. Cunningham, 1340 Harmon Ave., Winter Park, Florida

After graduation from the College of Medical Evangelists in 1952 and a rotating internship, my nurse-wife, "Trudie," our first son, and I spent an enjoyable 18 months on the Colville Indian Reservation in eastern Washington where I was a U.S. Public Health Service officer. For the next 2½ years, we worked as medical missionaries for the Seventh-day Adventist Church in Nigeria, West Africa, where the appalling enormity of the medical needs made our interest in preventive medicine really come alive. A residency in internal medicine at my alma mater in Los Angeles preceded our coming to the HSPH. Now, with our full complement of four sons, we are planning to return to Nigeria in August to take up duties there in the combined areas of internal and preventive medicine.

GEORGE A. SAXTON, M.D., 233 Walnut St., Brookline, Mass.

Born in Paris, educated in a Quaker boarding school and Harvard College, and trained as a clinical cardiopulmonary physiologist (at Harvard Medical School, H.S.P.H., M.I.T.), I established a respirator unit at the Univ. of Illinois in 1953. Here I became increasingly interested in the problems of respirator-bound polio patients, while serving as Associate Professor in the Dept. of Preventive Medicine. When, in 1960, the polio unit reached its logical conclusion, I felt the need to learn the basic sciences of preventive medicine so that I might apply these skills and training to the needs of the underdeveloped countries. A wife and four children are the "ends" for which all of the foregoing is only the means.

DAVID C. POSKANZER, M.D., 18 West Cedar St., Boston, Mass.

A.B. Harvard (History and Literature); M.D. Harvard; Chief Resident in Neurology, Mass. General Hospital; Moseley Traveling Fellow of Harvard University and Assistant Professor of Neurology, King's College Medical School, University of Durham, Newcastle-upon-Tyne, England. Married Joan Thomson 1957. Studied, taught and practiced neurology under the National Health Service for 19 months. Despite my innate conservatism I was genuinely impressed by the high level of care and freedom it allows both patient and physician from the strictures of financial considerations. I am planning a career in the preventive aspects of neurology beginning with the epidemiology of neurological diseases. This approach seems especially important because the nervous system seldom recovers once injured. Prevention seems to be the only solution.

LARRY D. SAMUELS, M.D., New Windsor, Illinois

From a background in biology and chemistry (Blackburn College, Carlinville, Illinois) and on into medicine (Univ. of Ill.), I've now reached the conviction that in genetics lies the answer to a multitude of man's unsolved medical problems, both those arising from his own hand, such as those of radiation, in whose investigation I'm currently involved, and those arising seemingly at random for reasons unknown. My approach will be primarily through research and teaching, initially with the U.S. Public Health Service.





EVALYN G. EVERETT, Ph.D., 3222 Main St., Napa, California

Ph.D., New York University, 1956. Will return to work as Clinical Psychologist at Napa State Hospital, Imola, California, with plans to work in Community Mental Health.

CAROLYNN M. GOLDRATH, 2225 Bunker Hill Drive, San Mateo, California

Received A.B. in 1951 from San Francisco State College; M.S.W. from University of Denver, 1954. Past employment in California State Dept. of Mental Hygiene, and Santa Clara County California Dept. of Public Health, Bureau of Mental Health. Professional interest is in the area of mental health consultation. Plan is to return to California to work on state or local level as a psychiatric social worker.

MRS. RUTH FOGELMAN, 219 Himalyas St., Rio Pedras, Puerto Rico

B.S., University of Puerto Rico, 1945; M.S. and "MRS ", University of Tennessee, 1948. Since 1950 has been Asst. Professor of Nutrition at the University of Puerto Rico; will return to this position after an additional year of study at HSPH.

KATHLEEN M. BROELL, 3111 Walnut Ave., Seattle 16, Washington

Graduated from the Univ. of California in June 1960 in general home economics. Intends to specialize in nutrition.

MARION P. CULLEN, R. D. #1, Georgetown, Pennsylvania

Both the study of and working with large animals has been my major past activity. Future — undecided.





MISS VIRGINIA G. DEMAREE, Plattsmouth, Nebraska

A graduate of University of Nebraska School of Nursing (1953) with a B.S. from Simmons College (1956). I am obtaining M.S. through the Simmons College program and plan to teach Public Health Nursing.

MARIA BATES WORCESTER, 205 Putnam St., Waltham 54, Mass.

I received my Bachelor's degree in Nursing from Simmons College, worked as a staff nurse at the Waltham V.N.A. and am now studying for the Master's degree in Public Health Nursing at Simmons College. I hope to teach Public Health Nursing in the future.

(MRS.) THERESA MARIE MURPHY, 5 Orchard St., Jamaica Plain, Mass.

I have worked as a counselor in an insurance company rehabilitation center and more recently as Assistant Coordinator of the Rehabilitation Program at the Mass. General Hospital. After I receive my M.S. in Public Health Nursing from Simmons College, I plan to continue to work in the field of rehabilitation.

### *Students Not Pictured*

#### *Full-Time Degree Candidates*

Lenin A. Baler, Ph.D.	Edward J. Burger, M.D.
Public Health Admin. (Mental Health)	Industrial Hygiene (Aviation Medicine)
Marvin N. Glasser, M.P.H.	Lloyd B. Tepper, M.D.
Biostatistics	Occupational Medicine
Carl S. Shultz, M.D.	Benjamin C. Duggar, S.M.
Public Health Practise	Industrial Hygiene
Lucila E. Sogandares, M.S.	
Nutrition (receiving S.D.Hyg. June, 1961)	

#### *Part-Time Degree Candidates*

Elizabeth K. Caso, S.M.	Robert L. Glass, D.M.D.	Nicholas Revotskie, M.D.
Nutrition	Epidemiology	M.P.H. Candidate

#### *Part-Time Special Students*

Peter E. Barry, M.D.	Florence Avitable, M.D.	Jay P. Bartlett, M.D.
Victoria M. Cass, M.D.	Sanford Kravitz	Alfred K. Neumann, M.D.

#### *Students in Absentia*

Carl Erhardt, S.M.Hyg.	Jamal K. Harfouche, M.D.	Louis F. Johnson, Jr., M.D.
Biostatistics	Maternal and Child Health	Physiology
Lorraine V. Klerman	Louis M. F. Masse, M.D.	
Public Health Practise	Biostatistics	

## *Activities*

Orientation, attempting a synthesis of order from confusion, had moments when it seemed a synthesis of confusion. Before departmental enzymes began work, the substrate of students was activated in several ways. American teaching approaches and cultural habits were explained to those interested; this experience also provided opportunity for getting to know each other. Students who were social workers were primed with regard to local social work and welfare organizations; all students had at least brief counsel. After Dean Snyder welcomed the class and introduced the heads of departments, studies began in earnest. The School Administration and faculty continued efforts to facilitate adjustment to the School and its academic demands. The Faculty Wives, under the chairmanship of Mrs. Whittenberger, were of great help in solving many problems.

At a reception for students and faculty held at Harkness Commons in Cambridge, President and Mrs. Pusey, Dean and Mrs. Snyder and the Assistant Deans received the class. At this premier function faculty and students intermingled in warm meeting and greeting. A number of the foreign wives emphasized the class's international origins by wearing colorful native dress.

A New England fall outing was given when Dean and Mrs. Snyder were hosts at a picnic for the class at the Dublin Lake Club in New Hampshire. A brisk sunny day, foliage at the height of fall color, doughnuts, cider and a sliding board provided the setting for a memorable day.

As the first quarter gave way to the second, the pressures of reading from the lengthy reference lists, writing the term papers and completing the problems in Biostatistics became a daily demand. The Curriculum Committee arranged study groups for those students who wanted special help in any subject and found qualified students to serve as tutors. This form of small-group teaching was favorably received. But social life was not neglected. Early in the year, a group of students gathered each Friday afternoon in a corner of the playroom of International House for a Happy Hour. This informal gathering continues — an opportunity for fellowship, relaxation, airing of gripes and dreaming of the future. Among student-arranged social events were teas for faculty and students in the Huber Room at the School.

Meanwhile, the Forum Committee was busy. At the first forum Drs. Leavell, Weller and O. Simmons talked on Evaluation of Aid Programs to Underdeveloped Areas. A spirited debate of the issues followed with the audience actively participating. The Forum Committee also arranged a series of student presentations, the first at International House on March 1 when Anthony Adams related his experiences on a trip to China in 1957 as a member of a student delegation from Australia, the second considering the question of thermonuclear war as a public health problem.

As the second term entered its final half a race between the narrowing time until exams and the temptation of late arriving spring swept up many of the class as they worked in their several groups, looking toward the coming year, making final plans as to fellowships and details of work and formulating ideas with which forthcoming classes might be counseled.





## *International House*

Many of the student activities this year were connected with International House. A long-held dream of the School came into reality when International House was opened in September, 1960, so that our class had the privilege of being the first to occupy the House. There are 69 apartments in the three buildings on Park Drive, this year giving shelter to 70 people from 15 of the United States and 71 people from 22 other countries. In September there were 39 families including 40 children, but there were six babies born to families in the house and several more babies on the way before the year was half over. A group of American and foreign students from other Harvard Graduate Schools, and physicians pursuing advanced studies at the nearby hospitals were also living in the House.

International House is a convenient place to live. The apartments were well decorated by Mrs. Barnaby and Dr. Marjorie Young, with the furnishings in all apartments similar except for color schemes, so that one feels at home whether in his own or his neighbor's apartment. Each apartment is distinguished by signs of its particular occupant's culture, but the wives and children made friends quickly, and students have found it possible to obtain help with school problems by going no farther than the next apartment.

Both those who reside at the House and those who live elsewhere have found International House a focal point of activity. To show this to the sponsors whose generosity had made the House possible, the School arranged a reception for them with the students joining the faculty as hosts. President Pusey used the occasion to announce that in honor of a long-time benefactor of the School, the House would be known as the Henry Lee Shattuck International House.

The renovation of the apartments at the House had been completed by the time school started, but work continued in the basement. Funds were available to finish a large children's playroom and a small laundry. The laundry is the busiest place in the House with washing going on from early morning to late at night. It has become, like the village well, a social center and place to meet one's neighbors and to exchange the latest news and views.

The playroom, furnished with toys and equipment, has been a boon to mothers and to fathers who are trying to study. During the long winter, this has been a safe place for

the children to play. Here, too, with generous help from the School, supervised play sessions, under the direction of a qualified teacher, were started at minimal cost to parents.

At Halloween, the ritual of trick-or-treat was a puzzling experience to the foreign children. They dressed up in costume along with their small American neighbors and accompanied them from apartment to apartment, receiving frequent handouts. At Christmas, there were parties for both adults and children. At the adults' party it was interesting to hear the traditional Christmas carols sung in other languages by the foreign students. Equally interesting was the common reaction of children from several lands to the appearance of Santa Claus at the children's party the following morning.

While most of this activity is in the playroom and laundry, the only finished rooms, funds have been secured from the Kellogg and Rockefeller Foundations to finish the basement as originally planned. There will be a library, dining area, kitchen, music room, and meeting and study rooms.

Life at International House has produced problems, some of which have already been solved. The Baby Sitting Co-op is an excellent example of successful problem solving. When in the evening one sees two open doors in a common hallway, it is a sign that a baby sitting arrangement is in effect. A real unsolved problem — the parking of autos — was intensified by the long, hard winter when snow plows walled in the parked cars with 3 or 4 feet of snow that froze solid in the below-freezing temperatures.

Fire safety was an ever present concern of the House Committee. After a toddler started a small fire by turning on a stove burner, a fire drill was scheduled so all residents would be prepared in case of fire. Daily life has been made more comfortable by the Resident Superintendent, Mr. Alfred Garron, who, with his family, has become an integral part of the House.

The House has become a true International House in spirit and in use. Its residents live together in amity — people of many nations, religions and creeds seeing each other for what they are: people of good faith with a common objective — to learn so that they can help their fellow man.

During the year, awareness has developed of the School's commitment to the cause of International Health, a conviction that international understanding and peace can find common ground in the goal of improving the health of all peoples. International House is a tangible symbol of the School's commitment.

### *A House for All Nations*

Whether the words come out as "On aika lahteä," "Sar al waktu letath'hab," or "Es tiempo para salir," it means "It's time to go" each morning from some students of International House. Although some are Cambridge-bound to the Schools of Law, Business and Economics across the Charles River, the majority will spend their day at numbers 1 and 55 Shattuck St. at the School of Public Health. Wherever they go, however, home for all of them are the apartments on Park Drive which, though little different from the adjacent brick buildings on the outside, is distinctive within.

The cosmopolitan flavor of International House is real. One can hear the easy-flowing French in the evening hallways, the happy mother-child prattle in Hindostani, the explanatory TV asides in Yugoslavian, and the after-hours family talk in Japanese or



in the southern drawl of Florida. But it's more than the strangeness of foreign tongues. It's the beautifully exotic sari, the varied skirts and slacks, and the occasional quaint but lovely kimono. It's the friendly guests for dinner — for rice and curry, for beans and tacos, or fried chicken and apple pie. It's playtime, too, where children quickly pass the linguistic sound barrier to enter into the land of fun where shouts and laughter and even friendly shoves soon establish playroom diplomatic relations.

Yes, it is international, but it's a house of homes as well. One cannot very well generalize about people but can only say a bit here and there about each one in his way. For some who live alone, it's just two rooms, but a little music, a few choice books and a drop-in friend make it home. Sometimes this solitude is rent by some neighbor's brood of three or four whose lively din or bedtime story is just two inches of wooden door away.

Oh, those icy wintry days! For some the snowy drifts were the first that they had ever seen. For all of us the snow provided its share of fun and problems. To superintendent Garron its beauty was marred by the task of tossing it away to clear the walks, and to Nepco, his merry mascot, it meant only the cold wetness on his unwinterized dachshund undercoating. Those with artistic sensibilities will remember the Harvard snowman and will still lament his passing with the warming sun. We will not soon forget Al Kogon on his cross-country ski-run to morning classes, nor fail to recall the daily jockeying about of Fords, V-W's and Renaults to keep a nearby parking spot or avoid the ominous threat of ticket or tow truck.

Few drive their cars to Shattuck Street. Both the brisk walk and the impromptu exchange of ideas that inevitably come during daily treks down Louis Pasteur Avenue are refreshing. There is always something good for conversation — the Zionists and modern Israel, family planning in India, the philosophies of Albert Schweitzer and Tom Dooley, the political scene in Iraq or the merits of the Peace Corps. There is lighter talk too — of "My Fair Lady," the latest run of wins by the Boston Celtics, or a challenge for ping pong at the basement table.

There is *some* time on the program, of course, for a bit of study now and then, especially as Louisville budgets, quizzes, term papers and seminar assignments create a recurring cycle of minor crises. But scholastics is not the subject of these remarks, so let's get back to the basement. While waiting for the automatic washers to do their dirty work, there is last month's *Saturday Review* or *Life* to read, or if one has picked these bare before, there are always the newsy notes on the bulletin board to scan — the latest word on the baby sitting co-op, nursery school affairs, a free concert, or an enquiry about two lost chairs — the messages frequently bearing the familiar signatures of house committee leaders, John and Carol Baier.

Just a sideward glance through the open door takes one from the laundry into the tile-floored and acoustically-ceilinged playroom which has served not only its intended childhood objectives but others as well. It has been the late-hour haunt of the TV devotees, the concert room for "Rick" White's piano capers, a sometime common room for Friday night cocktails, a center for the student forum with "Tony" Adams' picture-story of his tour of Communist China, or the setting for a festive holiday party.

We who have lived here in a spirit of friendship and have shared the benefits of the inter-cultural exchange want to express our appreciation to the leaders of the University for their large vision in conceiving this house of all nations and to those public-spirited donors who have given so generously of their means to make this vision a reality.

*Herschel Lamp*

## QUOTABLE QUOTES

To some, apt wording is a habit; to others it seems more often an accident. Among the phrases which caught our ear during this year were:

"The class of 1961 has been broken down by age and sex. . . !"

Concerning lectures:

"It looks as if I'll finish early — which would be bad — I'll try not to. . . ."

"If I knew anything about it we couldn't cover the ground. . . ."

"We can wind up (this lecture) but we'd better not. . . ."

(At the beginning of a lecture) "I hope this won't be superfluous. . . ."

(At the end of a lecture) "Any questions, comments or jokes?"

Concerning our environment:

"We are neither for or against background radiation. . . ."

"Populations have been going on for quite awhile without much being done about it. . . ."

"The object of an oyster is to convert the world into oysters. . . ."

(Concerning colds) "There is very little else a nose can do except getting stopped up and run. . . ."

"Nobody holds a monopoly on sexual promiscuity. . . ."

Concerning medical and public health practise:

"Draw a rough sketch — we always recommend it and nobody does it. . . (in biostatistics)."

"Put a few epidemiological floors under some diseases. . . ."

"You must accept Massachusetts as the universe." (This obviously is a modern statistical version of the old Hub Theory! . . .)

"I decided not to put all my eggs in a radiation basket. . . ." (Reply: "I should hope not!")

"A basic rule of public health is that those who need help most will heed it least so that soon they will need it more. . . ."

"What we need in public health is a psychological fluoroscope so that we can tell when the advice fits the patient's needs. . . ."

"You can pick a test to give you any answer you want. . . ."

"A psychologist is a person who pulls habits out of rats. . . ."

"Anthropology is the study of man, embracing woman. . . ."

And a final bit of sage advice, given just before a break:

"All I can say is that when you curl up with a good book in front of the fire this vacation, make sure it's the right book. . . !"



"WE GOT US A BOY . . ."



"HOW TALL IS A BOY . . . ?"



CLASS OFFICERS: Executive Committee (*seated*): Gordon Siegel, George McClellan, chairman, Ruth Gruschka, K. P. Chen; (*standing*): Steve Plank, chairman, Forum Committee, John Baier, chairman, International House Committee, Larry Samuels, chairman, Yearbook Committee. *Missing from Picture*: C. Martel Bryant, chairman, Social Committee, George Denniston, chairman, Curriculum Committee.

"CHALLENGES" STAFF: (*l. to r.*) George Saxton, Don Silva, Lucy Ozarin, George Denniston, Don Strand, Larry Samuels, Editor-in-Chief, (*insert*) Wadie Kamel. Contributors: identified by name with contributions. Secretary: Claire Wasserboehr (*not shown*).



## *Index to Biographies*

Adams, Anthony C.	86	Lamp, Herschel C.	92
Akay, Vedat F.	87	Legters, Llewellyn J.	81
Anderson, Donald O.	90	Librea, Arturo A.	73
Baier, John H.	67	Lin, Hsiang Ju	74
Bing, Peter S.	71	Lochaya, Serene	74
Bishop, Yvonne M.	85	Mahon, William A.	82
Bragg, Robert L.	67	Masters, Richard L.	76
Brigante, Thomas R.	80	Mata, Leonardo	89
Broell, Kathleen M.	94	McClellan, Samuel G.	66
Browne, Ivor W.	68	Menken, Jane G.	84
Bryant, Charles M.	84	Miller, Kent S.	68
Bullen, Beverly A.	74	Mohr, George C.	82
Byron, Virginia D.	70	Murphy, Theresa M.	95
Cargill, Louis H.	76	Neill, Robert H.	79
Chen, Kung-pei	86	Nevinny-Stickel, Hans B.	84
Cherubin, Charles E.	81	Ossi, George T.	73
Clayton, Lewis B.	66	Osterman, Naomi	71
Cullen, Marion P.	94	Ozarin, Lucy D.	68
D'Arth, James S.	78	Peterson, Norman	78
Davies, John E.	92	Plank, Stephen J.	72
Demaree, Virginia G.	95	Poskanzer, David C.	93
Denniston, George C.	72	Raulet, Harry M.	71
Dinbergs, Ilga K.	70	Reighard, Homer L.	82
Dunn, Robert H.	86	Samuels, Larry D.	93
Everett, Evalyn G.	94	Saxton, George A.	93
Faragalla, Farouk F.	74	Schultz, Irwin	89
Fernando, Malcolm A.	85	Scotch, Norman A.	67
Fogelman, Ruth D.	94	Seigel, Daniel G.	85
Fulmer, Hugh S.	92	Shahidi, Maria T.	87
Gaeta, Neil	77	Shamburek, Roland H.	75
Goldrath, Carolynn M.	94	Siegel, Gordon S.	69
Gruschka, Ruth	80	Silva, Donald	77
Gulati, Prem Vir	72	Smith, Joseph J.	83
Hall, Marie-Francoise	90	Spence, Harry Y.	87
Hall, Thomas L.	66	Strand, Donald J.	83
Hannon, Virginia R.	80	Tarr, John D. F.	69
Hayashida, Takuya	88	Temoche, Abelardo	89
Hertzog, James E.	75	Thompson, Marilyn M.	88
Holeman, George	79	Vanella, Jose M.	92
Holt, Clinton L.	75	Van Wyngarden, Don R.	70
Hosack, Alice M.	67	Western, Alfred	79
Hunt, Edward E.	91	White, Richard F.	91
Jackson, Howard W.	91	Wittmer, James F.	76
Kamel, Wadie W.	73	Worcester, Marcia B.	95
Kar, Satyabrata	83	Yoder, Robert E.	77
Kogon, Alfred	81	Yoshizawa, Susumu	78
Kozarevic, Djordje	69	Yuasa, Shu	88

---

The "CHALLENGES" Committee gratefully acknowledges the assistance of Mr. Roger Spaulding for administrative counsel, Miss Claire Wasserboehr for tireless secretarial service, Allston Foto Shop for custom photofinishing, Mr. Lawrence Webster of Thomas Todd Co. for art work and Mr. Thomas Todd, Jr., for counsel in many details of format and publication.

